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Bob Cooper's

AUGUST 15 1998

SatFACTS

MONTHLY



Reporting on "The World" of satellite television in the Pacific and Asia

IN THIS ISSUE

**STEP BY STEP
POLAR MOUNT
INSTALLATION**

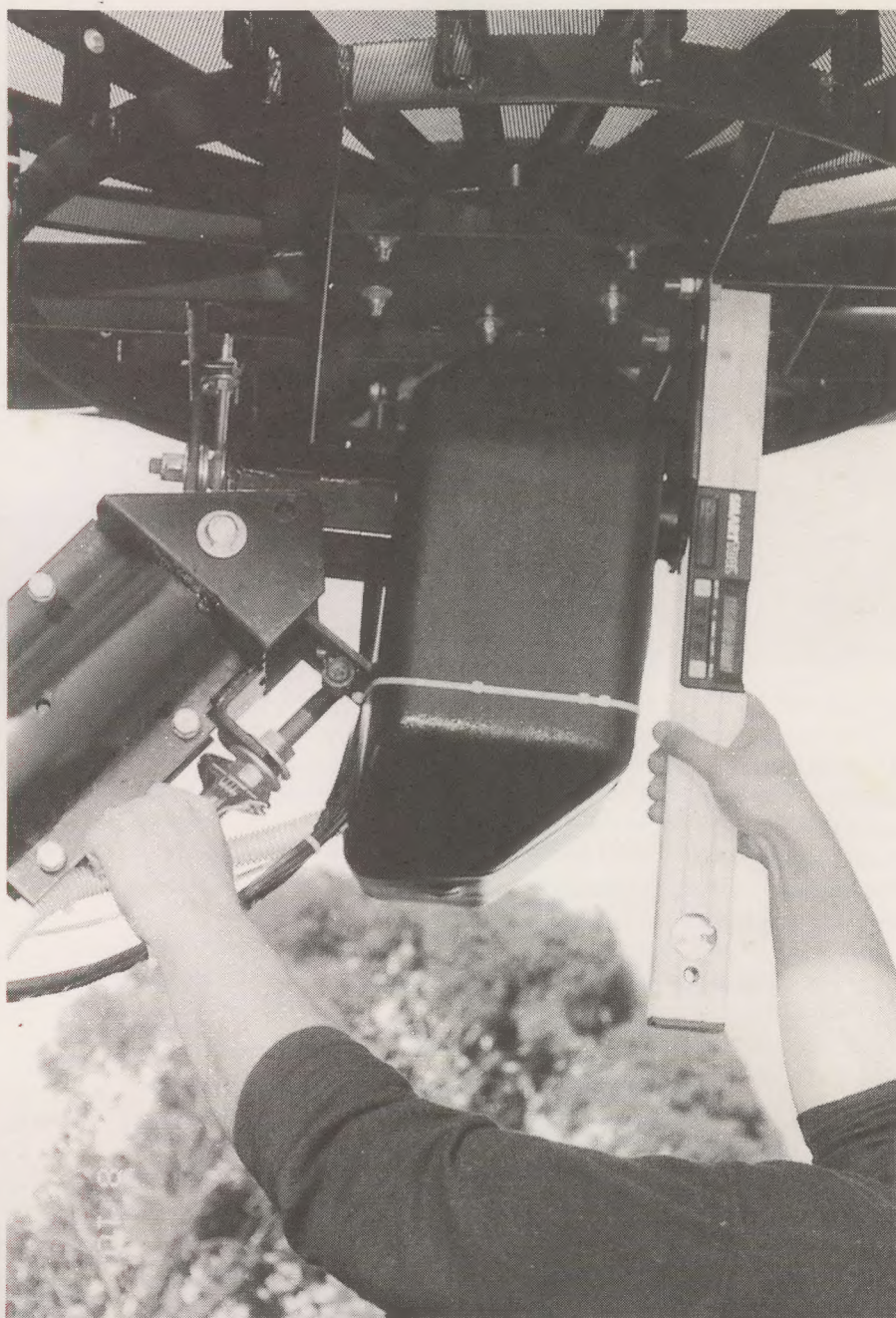
**TEST REPORT
PANASONIC
TU-DS10**

**SKY (NZ) Digital,
Internet DTH Launch,
Austar/Fox
Encrypt**

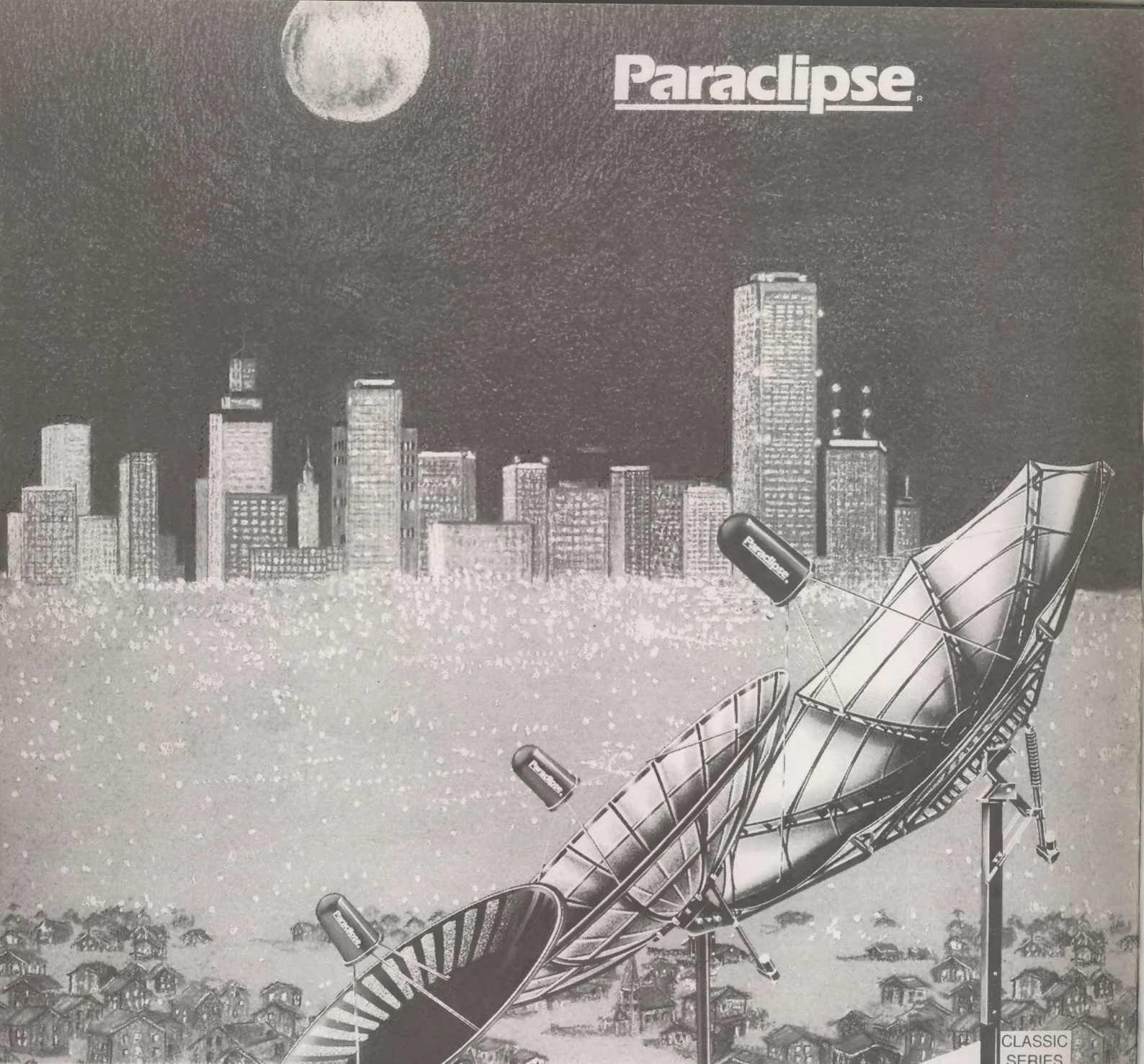
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This publication is dedicated to the premise that as we enter the 21st century, ancient 20th century notions concerning borders and boundaries no longer define a person's horizon. In the air, all around you, are microwave signals carrying messages of entertainment, information and education.

These messages are available to anyone willing to install the appropriate receiving equipment and, where applicable, pay a monthly or annual fee to receive the content of these messages in the privacy of their own home. Welcome to the 21st century - a world without borders, a world without boundaries.

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COOP'S COMMENT

To quote my grandfather, "The time has come for the nut cutting." Gramps was not into masochistic practices and a pocket knife in his hands was never a feared tool. He raised walnuts on a farm in western New York state and when the crop was ripe, it was his way of telling the world harvest of his labours was about to begin.

Nut cutting in the Australian DTH world is upon us. New Zealand will follow but it will be another year or more.

Out of the shambles that marked the failure of Galaxy there are now several significant signs the broken pieces that were Galaxy may actually reform as a strong, viable pay-TV industry in Australia. Here are some of the major elements.

1) FoxSat (not their name at this point - Sky Australia is a possible name) did not handle the transition period from purchase of the ex-Galaxy customers (and their equipment) to full encryption very well, but given the complex negotiations involved, I think they did as well as could be expected. There is still no public decision whether they will stay on B3 or move to PAS-8 but if gramps was a betting man, he'd put his money on B3. As we report on p. 15-19 here, "simulcrypt" could be the technical trick that makes this possible.

2) A growing awareness that Australia has sizeable numbers of immigrant ethnic groups capable of supporting specialised DTH pay-TV services is encouraging entrepreneurs to investigate delivering TV services from Greece, Italy and elsewhere. Optus, perhaps more by accident than planning, has the ideal delivery platform within their RABS project. With national coverage to 90cm range dishes (for most, not all areas), the uplink mux equipment in place and a convenient way to plug in RAI or ERT and a host of other European (or Asian) services, I believe Australian ethnic TV is about to explode. Think of it as SBS specialising in one-language programming a programme channel at a time. Which languages, which services? First those that will respond with subscription support in sufficient numbers to make this viable as a business, then perhaps some mixed channels delivering two or three different ethnic language services as a combined group. PanAmSat, by the way, is chasing this potentially lucrative market as well for PAS-8. Logic suggests Optus and RABS will win, however.

3) Optus DTH. They have played around teasing Australia with up to 16 FTA cable channel duplicates on B3 for more than a year now. If they had a choice, perhaps Optus (the telephone company) would get out of pay-TV (cable and satellite) altogether. They do not have that choice and are faced with going ahead with DTH or being buried by an aggressive Foxtel that makes a practice of harvesting its nuts by cutting down the trees. I wouldn't want to place any money on the likelihood Optus will finally launch a pay-TV DTH platform, but I would wager that if they don't make a firm decision on this issue before mid-September, outside forces will make it for them. If - IF - they do launch, it is likely to be done by selling DTH receiving systems through two or three nation-wide chain stores. This will create a sharp marketing distinction between Austar and Foxtel (both of whom will continue to own the subscriber equipment), and, Optus. With term financing of DTH systems offered by the retailers, the dollar difference for consumers could be small or not evident. Harvest time is here - now - and Optus knows it.

4) UEC 642. OK, so the power supply is a mistake, the software is immature, and South Africa is a long ways away. No matter; Optus wanted UEC to be the prime supplier for RABS and they got their way. And somebody got a sack full of nuts. That's life.



August 15, 1998

In Volume 4 ♦ Number 48

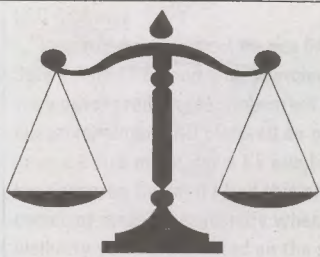
Polar Mount Tracking Techniques (Pietro Casoar) -p. 6
We Test the Comstream/Panasonic TU-DS10 -p. 15

Departments

Programmer/Programming Update -p.2; Hardware/Equipment Update -p. 4;
SPACE Notes (How NOT to Install a Dish) -p. 20; Cable Connection
(Austar CAMs) - p. 22; SatFACTS Orbit Watch -p. 24; MPEG-2 Tuning Parameters -p. 26;
Digi Notes Reference Information -p. 28; With The Observers -p. 29;
Sky (NZ) Digital Tests -p. 30; At Sign-Off (Safe Power Supplies?) -p. 32

-ON THE COVER-

Want to know how a pro aligns Clarke Orbit Belt polar mounts? Pietro Casoar, a SPACE Certified installer at Digitalsat in Melbourne, shares his step by step alignment process starting on page 6.



LETTERS

Austar Not Intimidated by Foxtel?

"Austar has begun to offer their satellite DTH service in Goulburn. Perhaps they are not as frightened of provincial cities as we have been led to believe (Canberra being a notable exception). They are offering 17 channels at \$44.95 along with 8 (they say to grow to 10) audio channels. World Movies will be \$6.95 extra. The service is therefore \$5 a month less than the FoxSat."

Darren Churchill, NSW

See Government statement, p. 30, here.

RAI Side Show

"Reference SF July p. 4. RAI on PAS-2 is not meant for public reception, only for those who pay RAI International Australia money to put it on their cable (or satellite) service. Remember that RAI Australia is really owned by an Arabian group who have no real concern for either Italians or Australians. RAI is simply a business for them, and they must regard RAI within the European bouquet as a significant business challenge. I believe the RAI office in Sydney does everything it can to encourage the free to air bouquet service to be as unattractive to Italians as possible. What a fine line they walk - how to make it unattractive in Australia (where their preferred delivery method is via pay-TV) while not degrading it totally for the Italian viewers elsewhere in the bouquet's footprint where a pay-TV version is not available. The letter written to Greece ERT in July SatFACTS gave me an idea. It was in front of me all of the time and I never saw it - thank you Paris Cockinos! Italian television is dominated by RTI Mediaset which captures 60% of the audience. That means RAI compared to Mediaset is worth nothing. So here is what we of Italian descent (there are more than 2 million in Australia and the Pacific) must do. Bombard RTI Mediaset with letters fashioned like that Paris Cockinos wrote to ERT. Their fax number is +39 02 21028476 and the contact name is Dr. Gianfranco Finamore. You can call him through the switchboard at +39 02 25141. RTI Mediaset has already launched a channel in the USA (called Mediaset International) and they are blitzing the competition (yes - they have soccer!). I know they have studied this market - and they need just a little shove. So spread the word amongst Italian descendants throughout the Pacific, using the Paris Cockinos letter (July, p. 20-21) as a guide. We can beat these guys who have stolen RAI from us if enough of us work together.

Pietro Casoar, Digitalsat Communications

Home town free to air TV, relayed around the world, usually turns into pay-TV. Still, choice is good (see RAI report this page, upper right).

PROGRAMMER PROGRAMMING PROMOTION

UPDATE

AUGUST 15, 1998

Austar/FoxSat finally encrypted all ex-Galaxy services mid-afternoon August 5 after toying with partial encryption for days (World Movies, Comedy Channel).

Optus rumour of the day/week/month. They have a September scheduled start date to encrypt the B3 services and to begin test marketing of a DTH service in selected Australian markets. Their plan is to retail IRDs (\$999 plus taxes and antenna equipment) through one or more major "chain stores" in Australia. Unlike Austar and FoxSat, the consumer will own the IRD and associated receiving equipment, and purchase a smart card for the programme package they wish to receive. Which chain stores? One, prominently under negotiation - starts with the letter "C."

NHK JoHo extending PAS-2 FTA analogue to end of September (was July). Alternate D9234 source - Atom Telecom at fax ++63-2-533-6170.

SPACE TV Systems - another change. Reports after mid-July say nine Taiwan based services are now FTA on 12.612V/Intelsat 177E. The once available Exxtasy and True Blue services no longer load, appear to be gone; up to 9 CA radio (audio) channels also present. Company's USA offices does not respond to queries - your guess is as good as our own as to what is really happening here.

Trackside Satellite Service (TAB) now functional Optus B1 Tr3U, 12.420 in FTA format, 1/2 transponder (audio 6.6, 50 us) on New Zealand beam. Trackside will use analogue as ramp-up to being part of Sky NZ Net's digital bouquet which apparently will test first in 3L (12.392 +/-) with Sky Sport, Sky 1, Sky Movies, CNN-Sky News as minimum in initial bouquet. When existing analogue services on 5L and 5U are available in digital, more than 12,500 analogue receivers are to be replaced with Pace digital IRDs (November onwards is schedule). See p. 30.

TVSN financial problems have shut down their use of most satellite feeds outside of Australia (AsiaSat 2, PAS-4, PAS-2). Receivers are trying to figure out best way to restructure TVSN to keep it alive; they had hoped to be able to service Australia, New Zealand and China but Chinese operation appears too expensive to continue.

Italy to be available through Aurora? Project to offer Italian (initially, others later) programming through Optus Aurora package on B3, vertical, closer to final decision. To support the service, new PAS-2 feeds have been testing (Vt, 3778/1372 with Msym originally 6.618 and 2/3, also using 23.695 and 7/8) from late in July. Digital programme listing says (1) ART America, (2) ART Movies, (3) LBC America, (4) RAI Int America, (5) LBC Australia, (6) ART Australia, (7) RAI Int Australia and (8) MCM Music Channel. Concept is Australians with interest in programming will install RABS-style dish with UEC 642 receiver. Pay-TV? Definitely.

Direct linking via PAS-2 (Ku) to Internet backbone in USA for 1.2m range dishes is now being tested in NZ and Australia. A detailed report in September - installers are needed; now. Contact Mick Clitherow at fax ++64-9-358-5619 or E-mail installations@star.net.nz.

EPG on PAS-2 Ku Telstra GWN bouquet for SA9234 receivers. Automatic downloading of new software began August 4th; also expands ability of 9234 to include menu driven switching to C-band California Bouquet, CCTV and others to maximum of 24 bouquets. Is SA finally coming to the party???

Foxtel information. Tired of calling their toll free number and getting incomplete answers? For an "insider" source, try Keith Cohen, System Integration Engineer, Foxtel at (+61-2) 9200-1614 or fax at (+61-2) 9200-1060.



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SatFACTS August 1998 • page 3

UEC Response

"Regarding your report on our 642 model in July's SatFACTS and your drawing some parallels with other products in the market. I note the digital /analogue IRD pictured on p. 12 does not have a C-tick mark, nor a CE number. You seem to have ignored this and I find this omission to comment strange, especially when considering the visibility you have created on the subject. Please note the UEC 642 you have shown in the same issue was a pre-production unit. Further, I presume the MediaStar imported by OPAC has the C-Tick? Your statement on the serviceability of the D7 is contradictory. On page 7, 'Fuse holder is at the bottom of the power supply compartment,' while the photo suggests the entire power supply would have to be removed to change a fuse? With respect to your note on the D7 and its fuse positioning (45mm below the top of the case), what about the exposed leads of the decoupling capacitor to ground and resistor on the primary side of the D7 supply? These leads will have AC mains present. Both leads are sufficiently positioned/exposed to suffer the same criticism as the 642. Ironically, the D7's lid is also slotted allowing such items as paper clips to fall in. And will you please correct your suggested technique for measuring signal isolation which you show on p. 10? The correct CENELEC procedure is to terminate the remod out terminal (with 75 ohms) and then measure any signal leakage at the (aerial) IN terminal. The concern is that a rooftop/external TV aerial does not become a re-radiation source for signals created inside of the IRD. This test cannot be done properly unless the remod OUT terminal is appropriately terminated."

Name withheld upon request
Mt Edgecombe, South Africa

The digital/analogue unit was a prototype, one of two in Australia, not offered for sale and not ready for C-Tick certification. SF understands UEC sent 80 of the 642s to Australia in May which it also claimed were prototypes (not requiring C-Tick). Yes, the 642 sent to SF for test was one of those (and therefore lacked C-Tick).

The D7 power supply. We find 8 volts AC on top of the resistor you specified. Down 21mm, we located 50VAC - well below the 6.25mm safety distance and not mains voltage level at that. As for the D7 and C-Tick, the D7 slots are a fraction of the length and width of those on the 642 - we tried to shove a metal paper clip through and succeeded only with great difficulty. You are right, it lacks labelling: another prototype? (See our expanded response on p. 32, here).

Is It or Isn't It?

"I am confused by a news release dealing with (NZ) Trackside becoming available on analogue satellite. Is it FTA or is it pay? If it is pay, how does one subscribe?"

JL Jessop, Christchurch

It is FTA analogue but Sky is charging TAB outlets a fee near \$40 per month to recover their costs in delivery. Existing analogue equipped Sky satellite homes can tune it in without paying and Sky doesn't seem concerned about consumer viewers at this stage.

When digital, it will be pay - not FTA.

HARDWARE EQUIPMENT PARTS

UPDATE

AUGUST 15, 1997

QPSK down and up converters. We reported in SF#44 (April, p. 11) progress with turning satellite QPSK into terrestrial QAM digital format so SMATV/cable systems could connect digital bouquets from satellite L-band directly to motel, hotel rooms. Problem is QPSK/QAM requires special QAM format digital set top unit (available, but expensive). We suggested at time the "right" solution would be to down convert the L-band QPSK service to a cable carriage frequency, then use frequency up-converter at each TV set location allowing standard, off-the-shelf IRDs to be used at in-room locations. Bingo. Model UFO 180 L-band down converter turns L-band input (within frequency range 1228 - 1812 MHz) into QPSK for cable distribution within 496-606 MHz region. Price - DEM 589. At the in-room location, up-convert 496 - 606 back to L-band using model UWS 26 at DEM 145. Now you can wire up a motel, hotel or add QPSK from satellite L-band to cable TV system for very reasonable costs and make the cable distribution system transparent to the original QPSK format. Want to know more? Contact Horst Wieser in Germany at (fax) ++49-911-44-0008.

ASIC. Pronounced A-sick. Quite a battle brewing over Application Specific Integrated Circuits in the leading edge technology world of conditional access IRDs. UEC says some of their competition (not mentioning *any* names, of course) are not making proper use of off-the-shelf chips and as a result IRDs designed making use of ASIC technology end up being "kluges" (our word, not theirs) patching together old fashioned chips to accomplish a task (such as demodulating MPEG video) which could be done better, more reliably, and cheaper using non-ASIC technology. To which Comstream/Panasonic responds, "Yes, we do use ASICs. This means that we use an IC developed by us, specifically for our IRD. This is not a gimmick, but a technique used by manufacturers to make complicated equipment more produce-able and reliable by combining a number of discrete components into a single IC. Some companies (not mentioning *any* names, of course) do not have the resources or know how to engage in this practice." There is a shirt pocket "button" hidden here somewhere. "I've been ASICed" and a counter-message button that might read "ASIC? ASICK!"

15,483 names are said to be on Optus B-MAC list being used by NSW firm to attempt direct-mail sale of UEC 642 IRDs. Retail price most often quoted is (A)\$999 with RABS smart card free to RTIF buyers, \$50 to new comers.

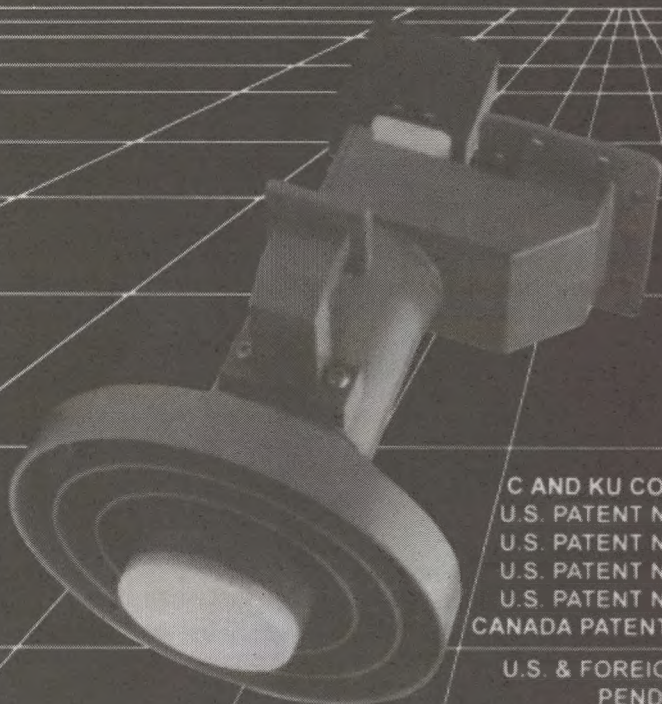
Small market. NZ's Prime TV is scheduled to initiate PowerVu linking of its network broadcast signal through Intelsat 180 this month, using left hand circular polarisation and an SCPC signal provided by Broadcast Communications Limited. Those requiring simultaneous LHC and RHC (for SPN) will need to retrofit feed with ADL CP OR 100 (frequency 4024LHC, Msym 6.876, FEC 2/3; too late for table).

Echostar 4, with some technical problems, has moved from test location at 127W to permanent location of 148W. This is to be high power DBS bird with thin possibility there will be out-of-footprint signals popping up in Pacific region at fortunate locations. Polarisation is apparently LHC, operating bandwidth is 11.7-12.2 GHz. Scheduled turn-on date for commercial service is September 1; happy hunting and reports to SF please!

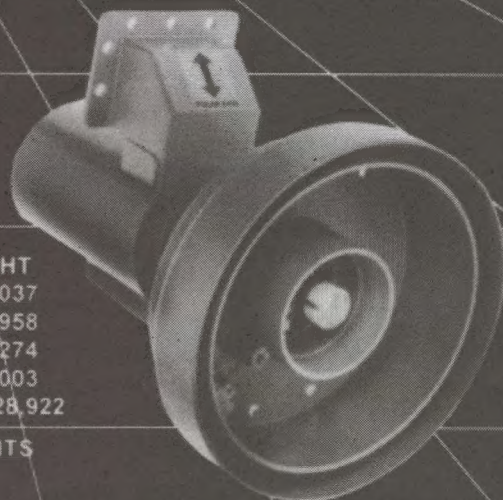
Nationwide Antenna Systems (tel 61-7-3252-2947), with UEC and Optus, organising twin 1-day digital TV courses at Belrose (Optus) Sydney August 18, 19 to assist dealers with RABS and DTH installation techniques. Two "surprise" announcements *possible*: UEC "name-game" and Optus announcement of DTH. SF suggests those attending could make and wear an "ASIC? ASICK!" badge on their jacket/shirt pocket to identify yourself as an SF reader!



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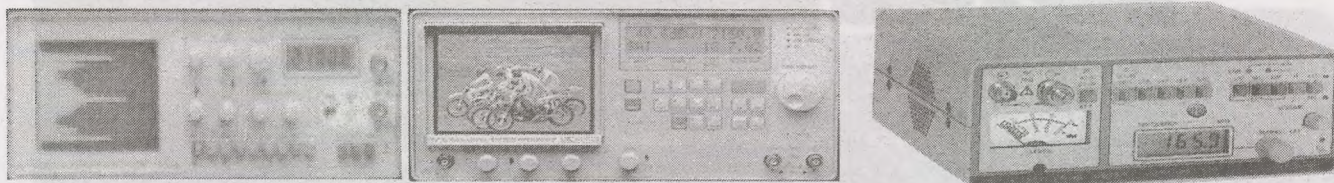
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TRACKING the CLARKE ORBIT With the Polar Mount



The ability to "see" the full L-band spectrum (left) is far better than being stuck on one frequency looking for a signal that may or may not be where the dish is pointing.

Industry technology guru Mark Long in one of his many detailed descriptions of home satellite dishes explains the polar mount as follows.

"Astronomers have used the polar mount for a long time because it allows their large telescopes to track stars as the earth rotates. With a polar mount, the dish rotates in an arc which mimics the curvature of the Clarke Orbit (belt). The axis of the polar mount must be installed so that it faces north (south for locations north of the equator). Once the antenna and mount have been properly installed, the polar mount antenna can track all of the satellites within view of the dish by means of a single adjustment in direction (called the azimuth). The antenna's elevation will automatically change as the dish moves east and west."

The tools you will need

- Spectrum analyser (or signal strength meter)
- A digital level ('Smart Level' or smart tool which is like the analogue magnetic inclinometer but far more precise)
- A reliable and precise compass (see p. 12)

When you are tracking any satellite, it is mandatory that you have a spectrum analyser or as a bare minimum, a

signal level meter. When you lock onto or pass by a satellite while tracking, the analyser allows you to see the full satellite (L-band) spectrum whereas a signal strength meter focuses you on a single carrier frequency which may or may not be the correct one for that satellite.

The second most important tool is a digital level. I have had excellent results with the American made "Smart Level" and it has saved me hours of precious time. It is very strong and although they do not recommend you drop it, mine has survived a three story fall without problems. The cost in Australian dollars is around \$120 - usually found at specialist hardware or tool shops.

The third is the trusted compass. Once you have experience installing dishes in a geographic area, you will have worked out roughly where to point the dish to lock onto satellite signals.

Technique

First, affix the mounting structure firmly and permanently. Most reference books urge you to be certain the pole is perfectly plumb, 90 degrees on all four sides. I second this although there are techniques (not discussed here) to "correct" for an out-of-plumb pole. Now assemble the dish and mount it on the pole. Next comes installing the feed and LNB and connecting the spectrum analyser or signal meter to the LNB output.

Now it is time to begin the adjustments to make the dish track the Clarke Orbit Belt.

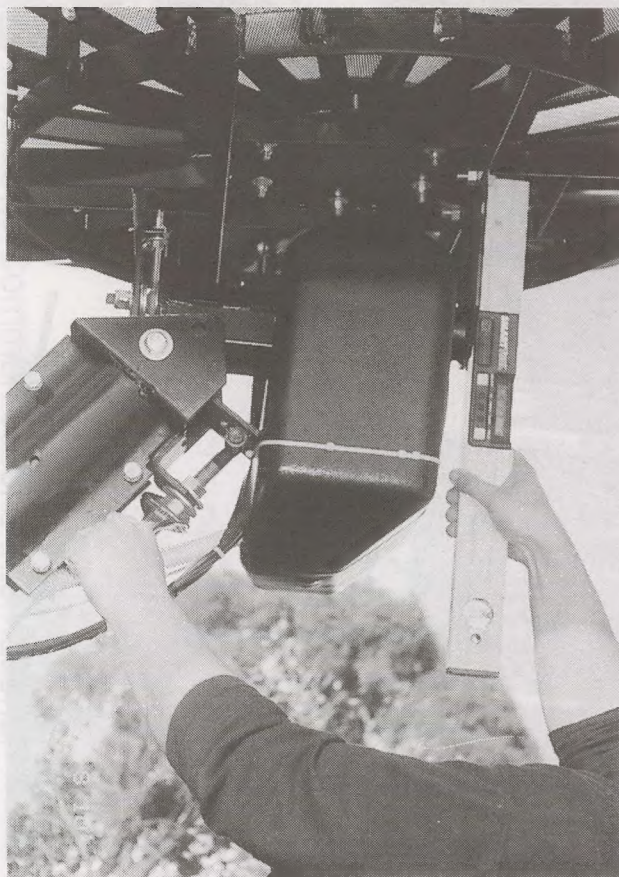
1) Tighten the clamping nuts affixing the mount to the pole sufficient that the dish does not wobble. You will need to swing the dish around the pole later on.

2) Using table one (p. 14), select the Polar Elevation Angle (PEA) that matches your latitude. For example, my location in Melbourne is 37.4900S (south) and the table tells me the PEA for this latitude is 51.8 degrees. Place the digital level on the top of the dish elevation bracket and adjust the dish elevation angle adjustment until it matches the correct angle for your site latitude. Tighten the elevation bolts at this angle.

SMART tool. The "Smart Level" is manufactured by Macklanburg-Duncan Company, PO Box 25188, Oklahoma City, Oklahoma 73125 (USA); tel + +405-528-3311



by Pietro Casoar, DigitalSat Communications,
Melbourne, Victoria, Australia tel 61-3-9306-4167
(SPACE Pacific Certified Technician)
[email: digitasat@crafti.com.au]



Place the digital level on the top of the elevation bracket, tilt the mount until it is at the correct angle for your site latitude. Tighten the elevation nuts.

Next we set the declination offset angle. Again, we refer to Mark Long.

"For exact tracking of the Clarke Orbit from the eastern to the western horizons, an additional adjustment called the declination must be included in the mount. The amount of declination required at any location will vary and it must be set correctly during the initial installation of the dish and mount in order for the antenna to properly track the entire portion of the geostationary satellite arc that is visible from the receiving site location."

1) Actuate the dish around so that it is directly in line with the mount (the dish and mount will be in a straight line - such as facing due north if south of the equator).



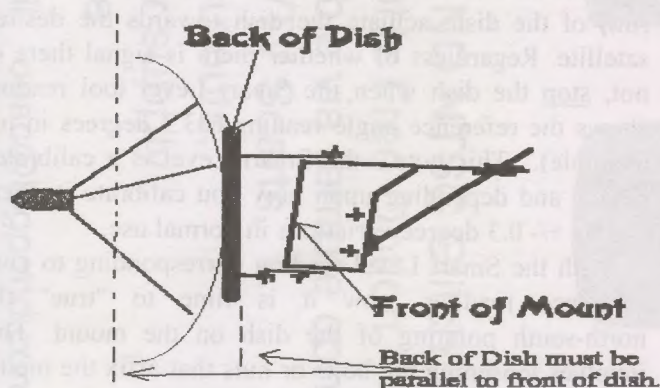
Declination setting. Actuate the dish to be directly in line with the mount. Place digital level on front of mount (see text); record setting shown on level.

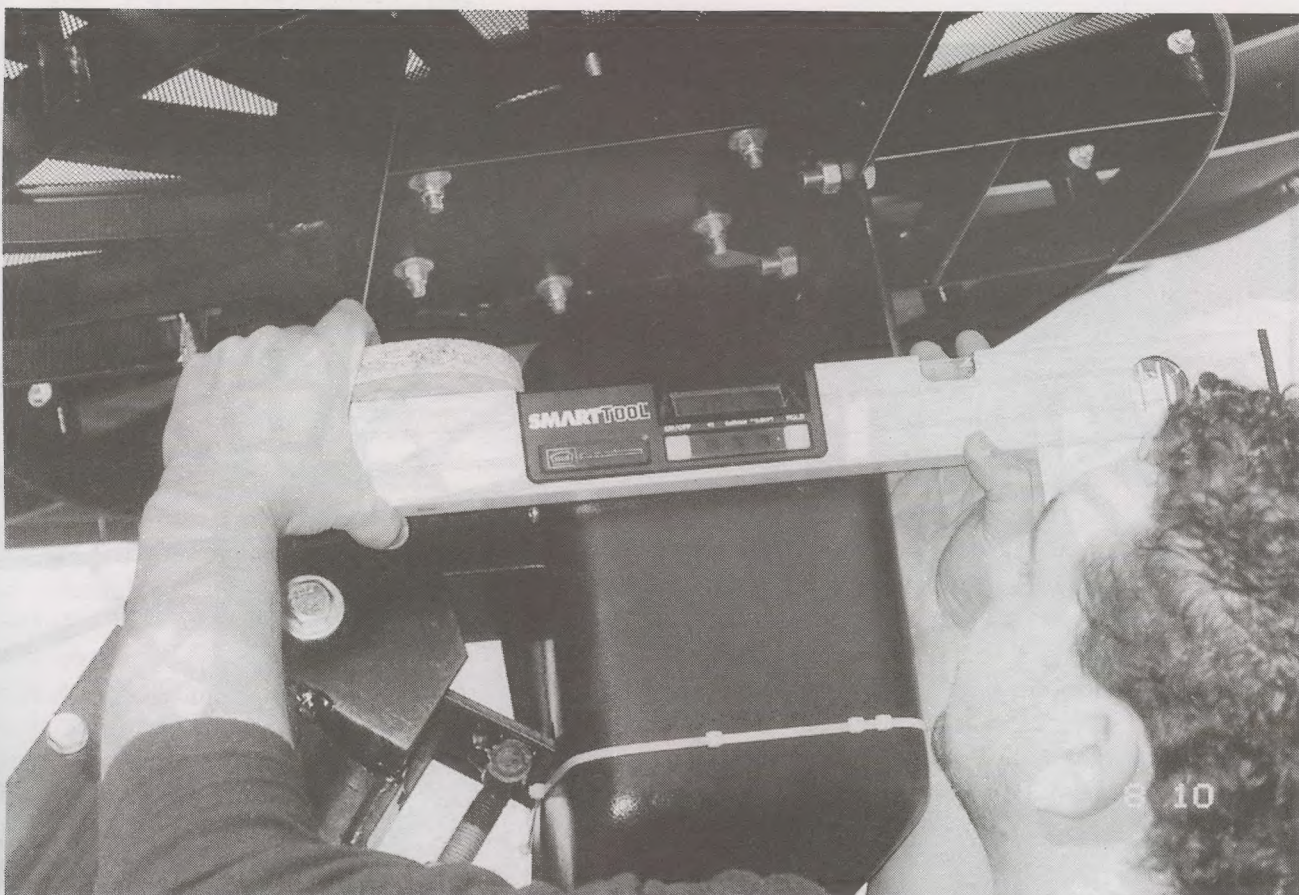
2) Place the digital level directly on the front of the mount (my Smart Level does not always fit into the tight area here and I use a piece of wood to act as an extension of the mount). Record the setting displayed on the level.

3) Now place the level on the back of the dish where it is exactly parallel to the pointing direction of the dish. Read off that angle and consult table 1. The declination angle for your location is set by comparing the declination offset degrees to the Polar Elevation Angle. In my example, the PEA is 51.83 while the declination offset is 5.30 (both in degrees). Declination offset is set using an adjustment provided by the antenna manufacturer for this exclusive purpose (check your antenna + mount manual).

Obviously you need to know your site latitude to use table 1. If your dish has no back plate to rest the level for measurement, use the front rim of the dish as shown in the photo on page 8 (the front rim and the "missing" back plate would be the same for a solid - not sectionalised mesh - dish).

At this point you have two important adjustments done. First you set the overall dish elevation adjustment to correspond to your site latitude. Second, you set the declination angle to also correspond to your site latitude.





Place level across back of dish, exactly parallel to dish pointing direction. Compare angle displayed with table one (here) and set declination (offset) angle. See text.

Now we are ready to tackle the azimuth (direction of pointing) for the dish.

A reference satellite

In using this alignment technique, you must be familiar with at least one strong satellite serving your region. From Melbourne, my preference is AsiaSat 2; for New Zealand, Palapa C2 (horizontal) looks like a

If your dish has no suitable backplate that is exactly parallel to the dish front plane, use the dish front rim - it is the same angle.



good choice. The important step here is to select a satellite of known reception quality, strong, that is someplace between your eastern and western horizons.

Using AsiaSat 2 from Melbourne, I have previously recorded that when the dish is pointed squarely at the satellite, my back of dish (or front rim) angle as read from the Smart Level is 63.3 degrees. In other words, if the elevation and declination adjustments have been properly made, by swinging the dish towards AsiaSat 2 the signal should be spot on when I arrive at my reference angle of 63.3 degrees on the Smart Level.

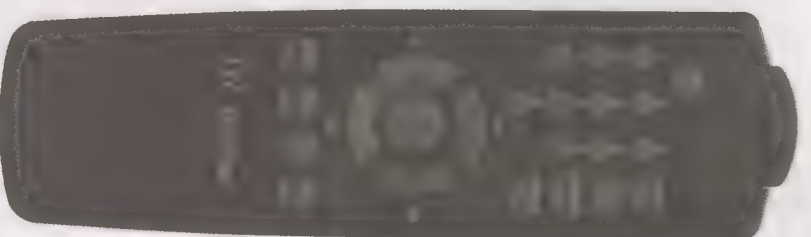
If this is the first installation for you, some fishing (azimuth tweaking) of the dish will be required to set your own reference satellite reading. You can do this from a dish previously installed as well.

With the Smart Level against the rear plate (or front rim) of the dish, actuate the dish towards the desired satellite. Regardless of whether there is signal there or not, stop the dish when the Smart Level tool readout shows the reference angle reading (63.3 degrees in my example). This note - the Smart Level is a calibrated device and depending upon how you calibrate it, there can be +/- 0.3 degree variations in normal use.

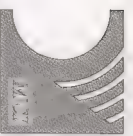
With the Smart Level reading corresponding to your reference reading, now it is time to "true" the north-south pointing of the dish on the mount. This involves loosening the bolts or nuts that affix the mount

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AsiaSat 2 at my location is at an angle of 63.3 degrees as measured on the backplate of the dish.



Actuate the dish and stop when the angle read corresponds to the reference satellite.

to the mounting pole so you can gently nudge the dish left and right (west and east).

Swing the entire mount + dish on the pole until you have located your reference signal (AsiaSat 2 in my case). Adjusting only the mount movement on the pole at this point, peak the signal for maximum on your analyser or signal level meter.

Gently tighten the bolts that hold the dish system stable on the pole mount. Do not tighten each bolt individually to full tightness; rather, tighten each with your fingers until you can move them no more, then take a wrench and tighten in sequence each bolt no more than 1/2 turn at a time. This stepped-tightening avoids having the first bolt knocking the alignment out of whack as it tightens up on the pole. Go around and around the full set of bolts, a half turn or less at a time while observing the analyser or signal level meter. As you tighten up the mount to the pole, the signal should remain in the same "peaked" state. If it suddenly drops off, you have tightened one bolt to the point that it has taken too big a bite knocking the alignment out of whack. Back up and repeat the tightening steps.

With the bolts tight, now you will use your hand to ascertain what fine tweaking adjustments are required. While watching the analyser/meter, go to the front of the

dish and lift up gently on the dish, pushing it skyward. If there is a decrease in signal strength, take your hand off the dish and allow it to "settle" and then repeat by pushing down (towards earth). If there is still a decrease in signal level, go to a side of the dish and push gently away from you (i.e., if on the west side of the dish, push it gently east by lifting up on the side). If the signal decreases, allow the dish to resettle and then pull down (towards the west in this example). If the signal decreases again, you have just tested and found that *any* movement of the dish surface (up, down or left or right) results in *less* signal. That tells you the dish is spot on the satellite.

However, if in any of these four push and test movements the signal actually became stronger - this is a red flag. The dish is not properly centred on the satellite. A warning. If the signal increased when you pushed up or down (as in elevation), **do not alter the elevation or declination settings**. That is a no-no (assuming you set them correctly to begin with following table 1). So how do you correct for up and down being off center?

Loosen the bolts that tighten the mount to the pole and nudge the dish east and west to repeak the signal. Check yourself when you are done by retightening the bolts (in sequence, a half turn at a time) and then go back and



Swing the entire dish (on the mounting pipe) until you find signal; peak on spectrum analyser / signal level meter and stop, tighten mounting bolts.



Push dish up, down, left and right to ascertain if you have maximum signal. **Never** alter polar elevation or declination settings!

push the dish up and down to check for signal level change.

There are steps to review at this point.

1) You pre-set the dish elevation angle using the table 1 numbers;

2) You pre-set the dish declination offset using the same table;

3) Using a reference known to you (63 degrees for Melbourne for AsiaSat 2), the Smart Level was used in conjunction with the dish actuator to pre-set the dish towards the reference satellite;

4) The reference satellite's signal was peaked by turning the dish on the mounting pole.

Under no circumstances, at this point, attempt to peak the dish by altering the elevation or declination pre-sets.

This primary advantage to this system is that once you are locked onto a reference satellite, if all adjustment angles are correct, you have probably finished work on the dish. The dish will now track through the complete

orbit belt with each satellite spot-on simply by moving the east-west actuator. If you need to confirm this, move the actuator from satellite to satellite with the analyser/signal level meter still connected. At each satellite, push up and down, left and right to verify you are spot-on.

Some variations

In a dual-tracking dish install, start out with the elevation actuator half in (out) as this will allow you maximum play in both directions if this is required (such as for the Gorizont family of satellites). You (and your customer) will need to know where the "zero setting" or midpoint is for the elevation actuator - typically read out from the receiver's reed switch sensor position indicator on the receiver actuator controller. It will be important when *not* tracking an inclined orbit satellite to reset the elevation motor to the "neutral" position so the dish will return to proper geostationary belt tracking.

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P
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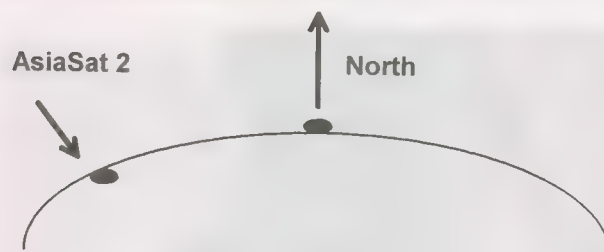
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If you are working on a C + Ku system, it may be necessary to nudge only the elevation nuts to confirm being dead-on target with a larger dish.



Help!

If you have difficulty with the last phase settings, try this guide to help you peak the signal without altering declination or elevation settings.

(For clarification, I show [above] my situation in Melbourne as a guide. On the compass heading, AsiaSat 2 is near 300 degrees; slightly more than half way between my western horizon and due north.)

1) If you are pushing the dish *upwards* for an increase in signal, then you must:

- Actuate the dish a touch to the *right* and then swing the mount, with the dish, a touch to the *left* (left and right as seen from behind the dish).

2) If you are pushing the dish *downwards* and there is an increase in signal strength, then you must:

- Actuate the dish a touch to the *left* and then swing the mount with the dish to the *right*.

Ku on a C + Ku dish? if the tracking seems off, try adjusting the elevation nuts slightly (1/4th to 1/2 turn maximum) to peak the large dish on the Ku bird. This is the *only* time you would ever retouch this adjustment.

-The quest for a professional compass-

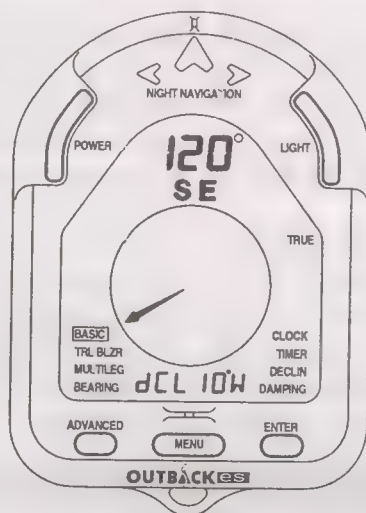
Finding north seems like a low tech challenge. For most purposes, knowing where north is located can be a guesstimate and within a few minutes time you will still locate the satellite belt (a function, of course, of your own skills).

Now comes the **Outback** electronic compass designed around US military needs. While in truth it may seem like overkill for satellite TV installation work, hidden away inside the high tech device are features which will make satellite installs quicker, more reliable, and repeatable.

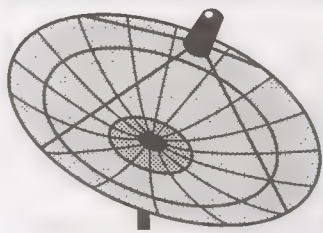
One of these is the "Bearing Menu

compass instantly produces an on screen arrow that tells you precisely where that particular satellite will be located from that site. This will certainly speed up a site survey and improve the accuracy of determining clearances from nearby objects that might fall in the satellite signal path. The beauty here is that from an operating dish, you set the memory positions up one time and then carry with you the dial-up ability to determine satellite look directions from anyplace you happen to be. **Outback** is far more than this - including

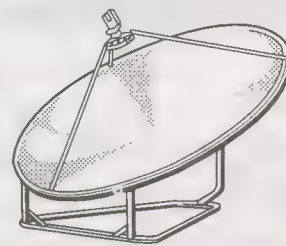
lighted use for night, umpteen storage positions to log trail and tramping paths, a magnetic disturbance alarm, electronic clock and much more. Pricing is in the A\$150 range through Sphere Communications (Jack Cockinos at + +61-2-9344-9111). Carrying satellite bearings in your pocket with a state of the art compass is terribly useful.



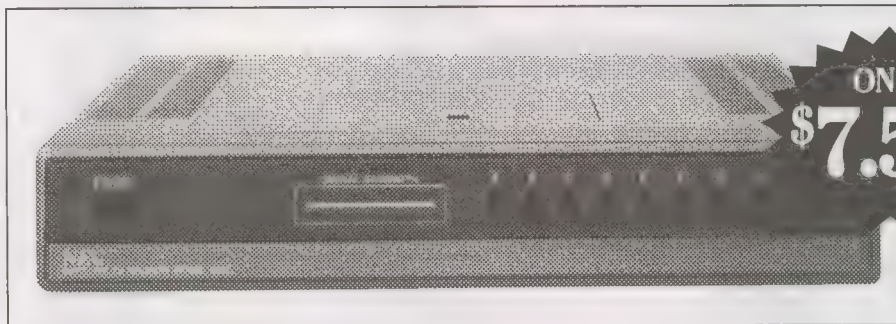
Option" which allows you to store up to 10 bearings in memory. This compass recognises the difference between magnetic and true north (an adjustment all satellite installers have to learn to live with) and allows you to stand behind a dish and select either heading with menu entry. If the installer has also entered into memory the bearing to (up to 10) different satellites, by standing at the proposed dish location you simply dial through the menu selecting As2, C2, As4/Gz, JcSat4 and so on right across the arc. As you enter each memory position the



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* \$7.50 is equivalent unit price when two units supplied.

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"Modified" Polar Mount Settings
(Finding your way through the dish set-up adjustments)

Site Latitude	Elev. Angle	Declin. Offset	Site Latitude	Elev. Angle	Declin. Offset	Site Latitude	Elev. Angle	Declin. Offset	Site Latitude	Elev. Angle	Declin. Offset
0(.00)	90(.00)	0(.00)	18(.00)	71(.58)	2(.70)	35(.50)	53(.84)	5(.06)	53(.50)	35(.85)	6(.96)
0(.50)	89(.49)	0(.08)	18(.50)	71(.07)	2(.78)	36(.00)	53(.33)	5(.12)	54(.00)	35(.35)	7(.00)
1(.00)	88(.97)	0(.15)	19(.00)	70(.56)	2(.85)	36(.50)	52(.83)	5(.18)	54(.50)	34(.86)	7(.05)
1(.50)	88(.46)	0(.23)	19(.50)	70(.05)	2(.92)	37(.00)	52(.33)	5(.24)	55(.00)	34(.36)	7(.09)
2(.00)	87(.95)	0(.31)	20(.00)	69(.64)	2(.99)	37(.50)	51(.83)	5(.30)	55(.50)	33(.87)	7(.13)
2(.50)	87(.44)	0(.38)	20(.50)	69(.03)	3(.06)	38(.00)	51(.32)	5(.36)	56(.00)	33(.37)	7(.17)
3(.00)	86(.92)	0(.46)				38(.50)	50(.82)	5(.42)	56(.50)	32(.88)	7(.21)
3(.50)	86(.41)	0(.54)	21(.00)	68(.52)	3(.13)	39(.00)	50(.32)	5(.48)	57(.00)	32(.28)	7(.25)
4(.00)	85(.90)	0(.61)	21(.50)	68(.01)	3(.21)	39(.50)	49(.82)	5(.53)	57(.50)	31(.89)	7(.29)
4(.50)	85(.39)	0(.69)	22(.00)	67(.50)	3(.28)	40(.00)	49(.31)	5(.59)	58(.00)	31(.39)	7(.33)
5(.00)	84(.87)	0(.76)	22(.50)	67(.00)	3(.35)	40(.50)	48(.81)	5(.65)	58(.50)	30(.90)	7(.37)
5(.50)	84(.36)	0(.84)	23(.00)	66(.49)	3(.42)	41(.00)	48(.31)	5(.70)	59(.00)	30(.41)	7(.41)
6(.00)	83(.85)	0(.92)	23(.50)	65(.98)	3(.49)	41(.50)	47(.81)	5(.76)	59(.50)	29(.91)	7(.45)
6(.50)	83(.34)	0(.99)	24(.00)	65(.47)	3(.55)	42(.00)	47(.31)	5(.82)	60(.00)	29(.42)	7(.48)
7(.00)	82(.83)	1(.07)	24(.50)	64(.96)	3(.62)	42(.50)	46(.81)	5(.87)	60(.50)	28(.92)	7(.52)
7(.50)	82(.31)	1(.14)	25(.00)	64(.46)	3(.69)	43(.00)	46(.31)	5(.93)	61(.00)	28(.43)	7(.56)
8(.00)	81(.80)	1(.22)	25(.50)	63(.95)	3(.76)	43(.50)	45(.81)	5(.98)	61(.50)	27(.94)	7(.59)
8(.50)	81(.29)	1(.30)	26(.00)	63(.44)	3(.83)	44(.00)	45(.31)	6(.03)	62(.00)	27(.45)	7(.63)
9(.00)	80(.78)	1(.37)	26(.50)	62(.93)	3(.90)	44(.50)	44(.81)	6(.09)	62(.50)	26(.95)	7(.66)
9(.50)	80(.27)	1(.45)	27(.00)	62(.43)	3(.96)	45(.00)	44(.31)	6(.14)	63(.00)	26(.46)	7(.69)
10(.00)	79(.75)	1(.52)	27(.50)	61(.92)	4(.03)	45(.50)	43(.81)	6(.19)	63(.50)	25(.97)	7(.73)
10(.50)	79(.24)	1(.60)	28(.00)	61(.41)	4(.10)	46(.00)	43(.31)	6(.24)	64(.00)	25(.47)	7(.76)
11(.00)	78(.73)	1(.67)	28(.50)	60(.91)	4(.17)	46(.50)	42(.81)	6(.30)	64(.50)	24(.98)	7(.79)
11(.50)	78(.22)	1(.75)	29(.00)	60(.40)	4(.23)	47(.00)	42(.31)	6(.35)	65(.00)	24(.49)	7(.82)
12(.00)	77(.71)	1(.82)	29(.50)	59(.89)	4(.30)	47(.50)	41(.82)	6(.40)	65(.50)	24(.00)	7(.85)
12(.50)	77(.20)	1(.90)	30(.00)	59(.39)	4(.36)	48(.00)	41(.32)	6(.45)	66(.00)	23(.51)	7(.88)
13(.00)	76(.68)	1(.97)	30(.50)	58(.88)	4(.43)	48(.50)	40(.82)	6(.50)	66(.50)	23(.01)	7(.91)
13(.50)	76(.17)	2(.04)	31(.00)	58(.38)	4(.49)	49(.00)	40(.32)	6(.55)	67(.00)	22(.52)	7(.94)
14(.00)	75(.66)	2(.12)	31(.50)	57(.87)	4(.56)	49(.50)	39(.82)	6(.59)	67(.50)	22(.03)	7(.97)
14(.50)	75(.15)	2(.19)	32(.00)	57(.37)	4(.62)	50(.00)	39(.33)	6(.64)	68(.00)	21(.54)	8(.00)
15(.00)	74(.64)	2(.27)	32(.50)	56(.86)	4(.68)	50(.50)	38(.83)	6(.69)	68(.50)	21(.05)	8(.02)
15(.50)	74(.13)	2(.34)	33(.00)	56(.36)	4(.75)	51(.00)	38(.33)	6(.74)	69(.00)	20(.56)	8(.05)
16(.00)	73(.62)	2(.41)	33(.50)	55(.85)	4(.81)	51(.50)	37(.84)	6(.78)	69(.50)	20(.07)	8(.08)
16(.50)	73(.11)	2(.49)	34(.00)	55(.35)	4(.87)	52(.00)	37(.34)	6(.83)	70(.00)	19(.58)	8(.10)
17(.00)	72(.60)	2(.56)	34(.50)	54(.84)	4(.94)	52(.50)	36(.84)	6(.87)	70(.50)	19(.08)	8(.13)
17(.50)	72(.09)	2(.63)	35(.00)	54(.34)	5(.00)	53(.00)	36(.35)	6(.92)	71(.00)	18(.59)	8(.15)

The Comstream/Panasonic TU-DS10 NON-RTIF APPROVED IRD

Here is an unusual situation to ponder. On May 11th in a formal public release, Damien Cook (Account Executive, Optus Communications) wrote:

"The following domestic decoders have been endorsed for use on the Optus Aurora satellite platform:

UEC - Model 642

Panasonic/Comstream"

Cook went on to write, *"The UEC decoder will be imported by Nationwide Antenna. Nationwide will be able to redeem RTIF vouchers for RABS viewers."* And, *"The Panasonic/Comstream decoder will be imported by Multilink. Multilink will not be able to redeem RTIF vouchers."*

SatFACTS and certainly others raised the question of why Optus would "endorse" (their word) two IRDs for Aurora but only approve the exchange of RTIF vouchers for the UEC. RTIF vouchers have a value of A\$750, paid for by the Federal Government, to ease the pain of converting from analogue B-MAC to digital. Most digital swap-outs involve upwards of \$200 plus the RTIF voucher.

Panasonic's TU-DS10 IRD won the RABS *battle* (by being "endorsed" by Optus for RABS use) but lost the *war* (being denied participation in RTIF funding). For at least the analogue to digital conversion segment of the

RABS market, the TU-DS10 is forbidden fruit. Is there something about the Panasonic unit that we have not been told; some operating factor which makes it suitable for Aurora use but not for RTIF exchange?

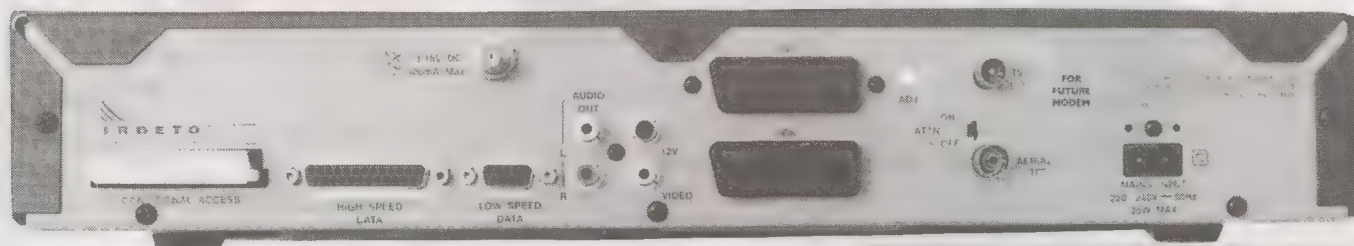
We first reported on the May 11th Optus advisory in our May issue. In June (p. 1) we reported in detail the language of the Optus statement and pointedly asked in print whether Optus could explain why two IRDs would be approved but only one of these could be "purchased" with an RTIF (subsidy) voucher. By July it was increasingly clear that the decision to honour RTIFs only for the UEC 642 was an Optus decision, not one made by Government. But we had no real proof of that belief. Now we do.

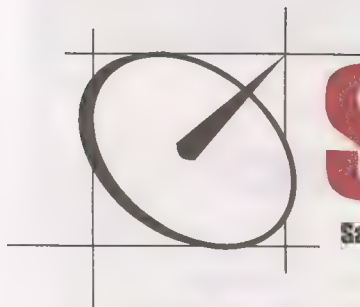
On July 9 an Optus employee, Richard Smith (Manager, Representation and Industry Development - essentially a lobbyist for Optus to Government) wrote a two page letter to Michael Sutton (Assistant Secretary, RTIF Secretariat, Department of Communications and the Arts). Here, Optus explained:

"Optus has selected this equipment for commercial and technical reasons and because the associated supply and support arrangements will best meet the needs of all parties, particularly end users. The selection of broadcasting receiving equipment for home use is a decision that would normally be left to



Front and back of the TU-DS10. What you see is a functional, straight forward approach to Irdeto IRD design. Is it "old" software and "yesterday's technology?"





SATECH

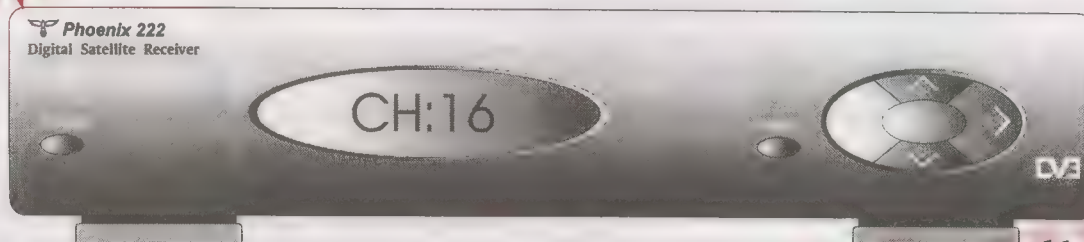
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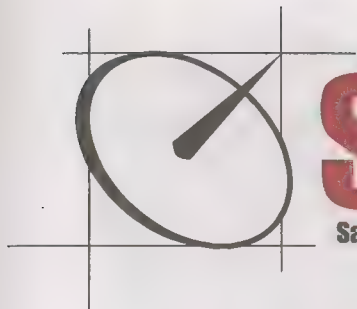
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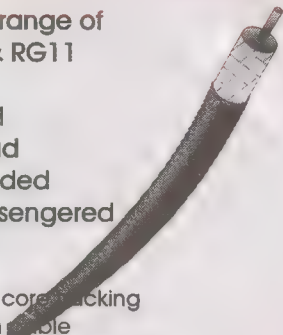
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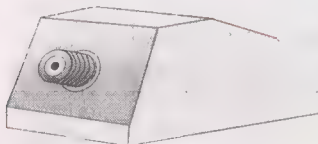
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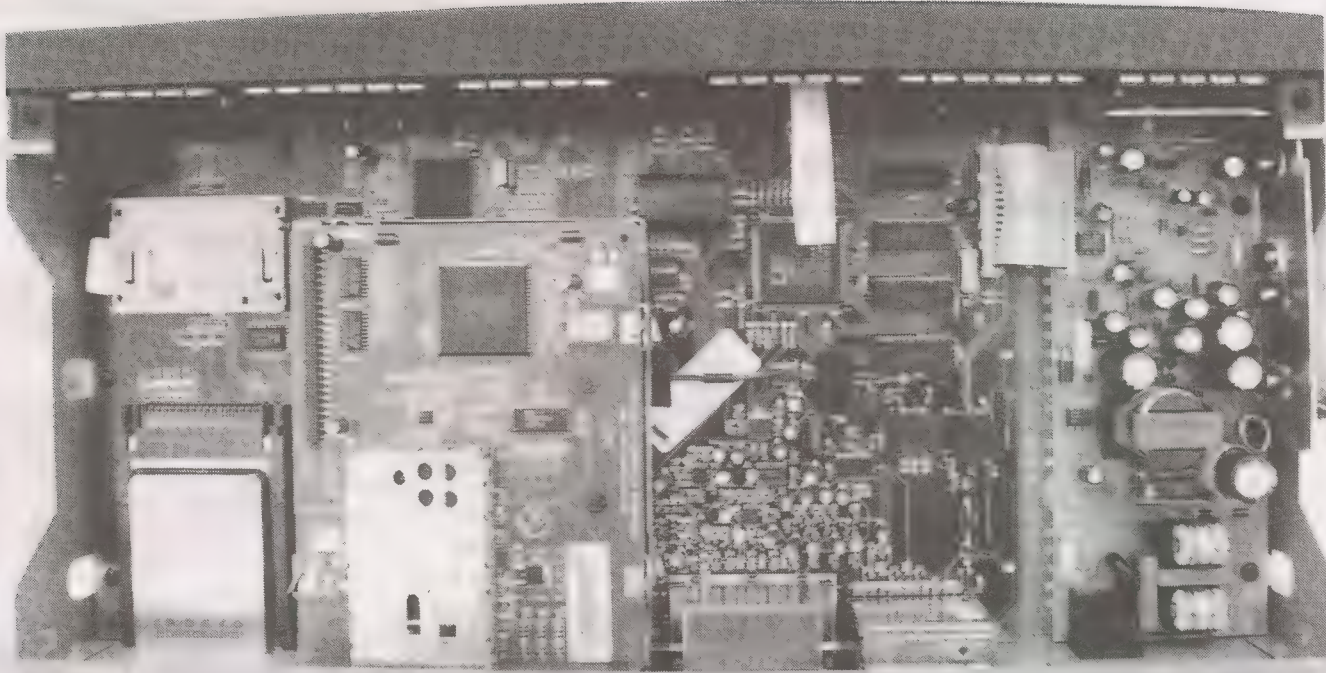
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Norsat - Western Australia -Tel: 08 9451 8300

Network Satellite Services - NSW -Tel: 02 9687 9903

Bay Satellite - NZ -Tel: 6843 5296

Satech - Victoria -Tel: 613 9553 3399



Clean, logical board layouts with one bothersome approach; partially double-stacked board (centre).

the consumer to make. (However), Optus has taken a lead role in not only testing and trialling different types of equipment but also in securing adequate and timely supply over the transition period. Accordingly, there are a number of brands of digital decoders that meet the basic requirements for use on the Aurora platform. However, this does not mean they are endorsed for use or are necessarily suitable for reception of particular services. Price of the equipment was a key determining factor. By testing and trialling a number of decoders, Optus has been able to apply competitive pressure to their price even though the final decision means only one is recommended."

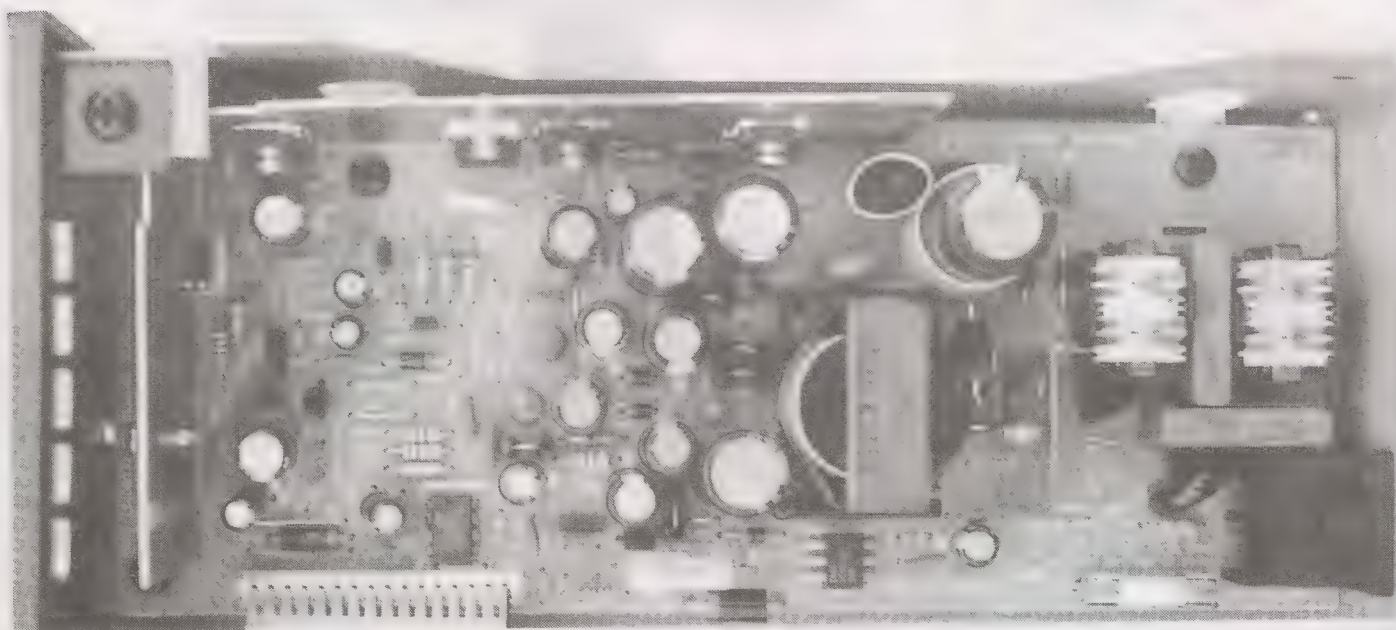
(Note: SF has abbreviated but not changed the essence of this lengthy letter.)

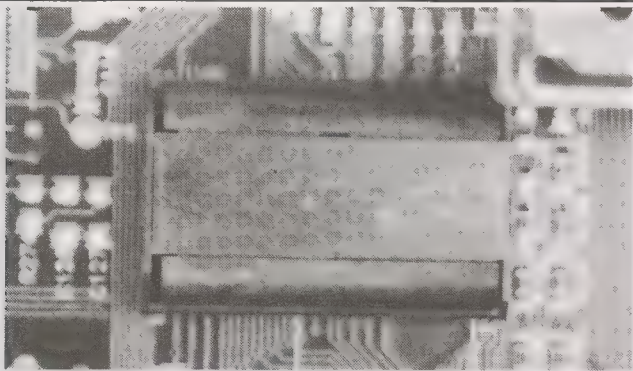
Where does that leave Panasonic?

1) Optus refuses to honour vouchers for Panasonic IRDs.

2) The RTIF people and Nationwide Antennas signed an agreement the week of July 27th giving Nationwide the exclusive rights to honour (take as payment) the RTIF vouchers. Nationwide sells only the UEC 642.

3) Too little - too late? Optus issued a letter the week of July 27th agreeing to approve the unit for Irdeto (Mindport) software version 3.27OA. Alas, approval apparently does not effect RTIF voucher use.





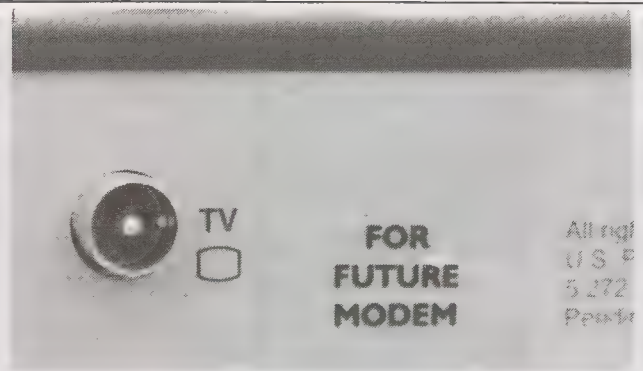
Flash memory capacity expansion is done here, inside of "pillbox" container.

We tested the TU-DS10. As the photos indicate, this is a well designed IRD. Upgrading is built-in and we suggest well thought out. A flash memory unit (above) opens pillbox style to allow upgrading of memory capacity. Side by side, we found it to be the equal of the UEC 642 (a tie in threshold level performance).

We did locate one interesting artefact. Using the (at the time) free to air Austar and the Optus B3 bouquets, we found a video "glitch" that appeared as horizontal lines dragging across the screen (see below, right). The lines appeared to be related to the bottom of screen programme identification data that initially comes up (for a few seconds) when changing programme services. In our tests, this artefact only appeared on the Austar transmissions (not on Optus). We queried Pieter Botha, Product Manager for the Set Top Box line at Comstream/Panasonic. He explained:

"PCR/PTS glitch: We have not been able to pinpoint the origin of this problem. We do know that STBs from other manufacturers experience the same problem, but we are still investigating and hope to resolve this soon."

We further understand that Optus in testing the unit located both this (PCR) glitch and a video artefact that appears for a split second when the audio channel is changed.

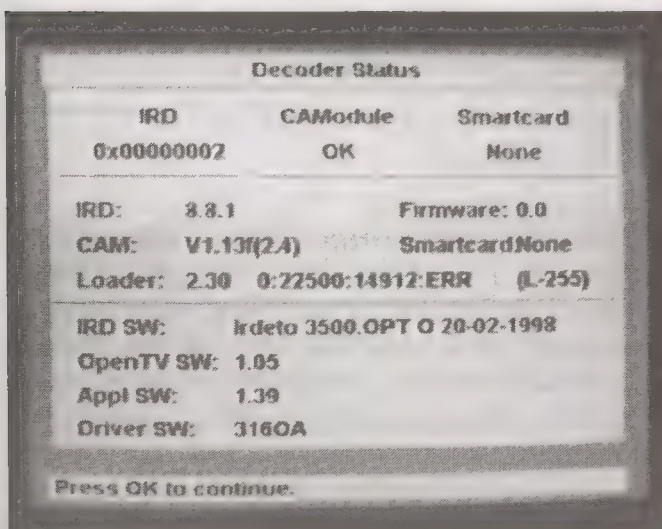


Modem entry plug-in on rear panel apparently will attach to internal connector strip

Another issue could be the lack of a built-in modem in the TU-10DS IRD. As the photo above shows, any user requiring this function can in fact plug in an external modem. Some of the users of Aurora (such as the Westlink project) do require a modem and if - IF - the same IRD now being distributed for RABS will also be used for pay television service from Optus at some future date (see p. 2, here), it is likely Optus will want a modem installed for the pay per view authorisation routine.

Now as for the "price consideration" which Optus claims was a determining factor in not approving the Comstream/Panasonic IRD. The UEC 642 has a "list" price of A\$999. For RTIF voucher purchasers, the RABS smart card is free of charge. For others, it is \$50. In quantity, the UEC 642 comes down to A\$700 at the (1,000 up) distributor level. It is more difficult to find a price on the Comstream/Panasonic unit but we did locate one Australian Internet site offering this IRD at A\$990 (Skyfox Communications at tel ++61-3-51- 33 7911 and fax ++61-3-51-337139). His site states, "See *Aurora better on a Panasonic IRD. Optus approved and tested; C-Ticked for Australia.*" Government statements aside, the RTIF issue is not yet dead and buried although plenty of bureaucratic time is being expended trying to make this one "smell better."

All important software versions - Irdeto 3(.500) is current while 'Open TV' should be 1.50 and not 1.05 shown here. Glitch noted on Austar (see text), right.



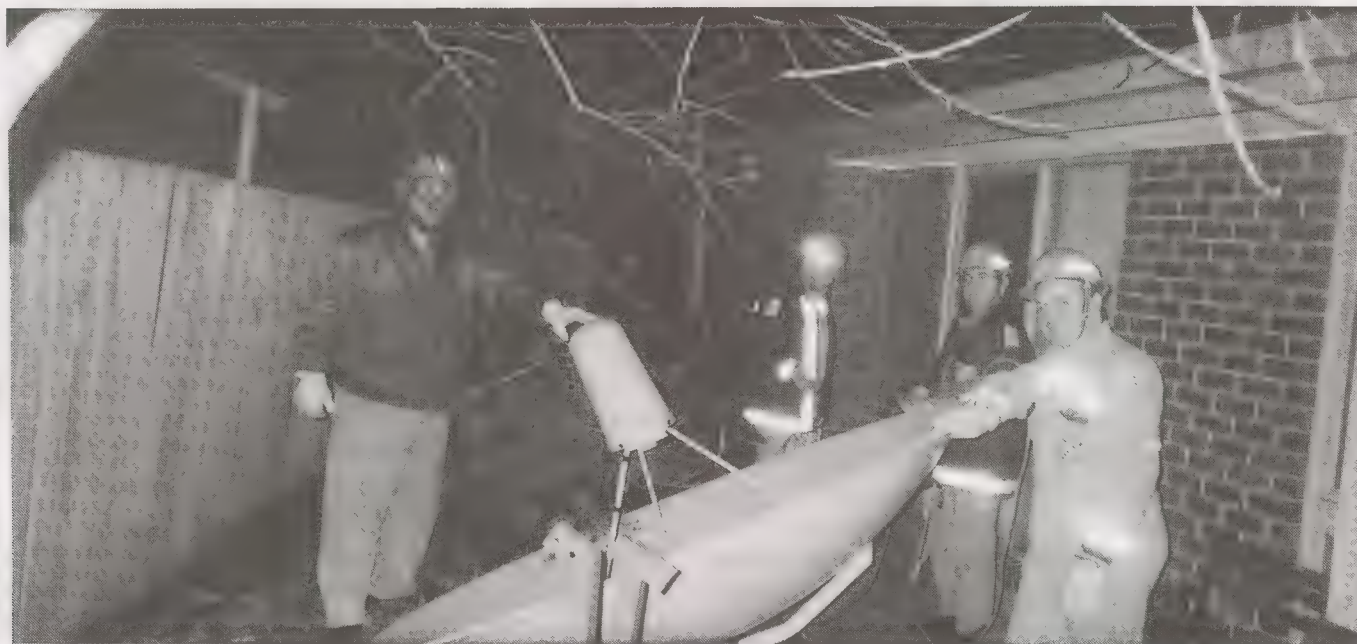
a technical and marketing
advisory
memo
to the membership from your
industry trade association

SPACE Pacific

Satellite
Programme
Access
CommittEe



A trade association for users, designers,
installers, sellers of private satellite-direct
systems in the Pacific Ocean & Asia Regions



Early this winter a Friday storm rattled fences and whistled through rooflines in the Melbourne suburb of Mill Park. There was nothing special about the storm, it will not be remembered as a great blow. Except by one family.

The photo above could have been taken anyplace and the four men shown *might* have been a crew assembled to *install* a satellite dish. In this instance, the quartet is from the (Victoria) State Emergency Service and they are not putting a dish up; they have just taken one down.

The State Emergency Service is in the business of rescuing people's property when it is endangered by forces of nature. They had been called by the distressed home owner because the brick veneer exterior wall you see in the right hand side of the photo was falling out. away from the house.

The satellite dish was the cause of the wall decay. Reportedly, an installer (we'll call him "John") had used lag bolts to attach the 2.3m dish to the brick wall directly behind the man on the right. The wall was

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Page space within SatFACTS is donated each month to the trade association without cost by the publisher.



Weight of dish, 'loaded' with wind, pulled mounting brackets out of brick veneer wall which was in danger of collapsing if the dish was not removed.

essentially unsupported, between two windows. The combination of the weight of the dish and the wind loading ripped the dish plus the wall outward. The panic stricken family feared (rightfully, it would turn out) their wall would collapse and called the State Emergency Service.

Why didn't they call John? He and his business could not be found. Before publishing this photo and report, SPACE checked with suppliers in the Melbourne region to learn more about John. *"He apparently is no longer in the business"* offered one prominent firm. *"He had some difficulty grasping the fundamentals of satellite installations, and although we did use him for some installs at one time, we no longer do so."*

There are too many "Johns" out there who cannot seem to get the basics of satellite installation quite right. We have no way of determining how well the installation worked electrically, but the photo tells us that at the very least John's skills as a structural "engineer" were lacking.

This photo was taken with a camera provided by the State Emergency Service. The photos provided to SPACE are also in a file at SES and have been tagged as a *"dangerous practice area to be monitored in the future."* What that says is the SES could well release the photos and their own version of this report as a *"warning to the general public"* about installing satellite dishes in a careless manner. There is a danger that incidents such as this could lead to new regulations (in Victoria and elsewhere) directly affecting installation of satellite dishes. As an industry, if we don't police ourselves and eliminate "John Goof Ups" we can be certain bureaucrats will step in to do the job. John's carelessness or stupidity made him liable for the damage done as well as the loss incurred by the unfortunate family in Mill Park. If John had been properly trained and adequately monitored by the industry at large, he would not have brought us to the attention of the SES.

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Mark Long - Space Pacific Certification courses are a service of your industry trade association (see above).

The CABLE Connection



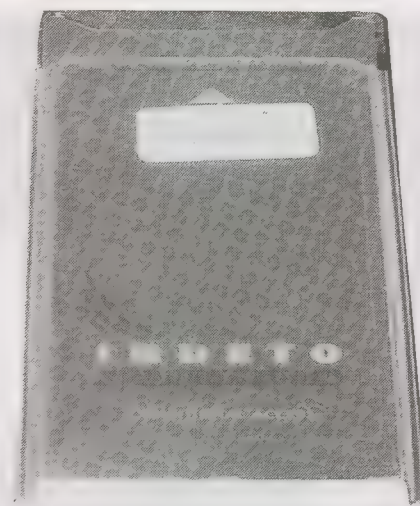
A lengthy analysis exploring the status of conditional access systems and how they are proprietary appears in the July 29th edition of Coop's Technology Digest. There, Peter Iles of CA firm Irdeto Consultants notes; "(Within 18 months) there will be no CAM (conditional access modules) left in current production IRDs. The trend is for more and more of the decoding to be done in the software whereas until now the decoding has been predominantly done in the hardware (chips). As software decoding takes over, the actual difference between a UEC or Panasonic or SMS IRD will disappear."

Perhaps. But today, there are radical operational and design differences in presently available IRD + CAM packages. Adrian Potter with AUSTAR Engineering contributes to what follows.

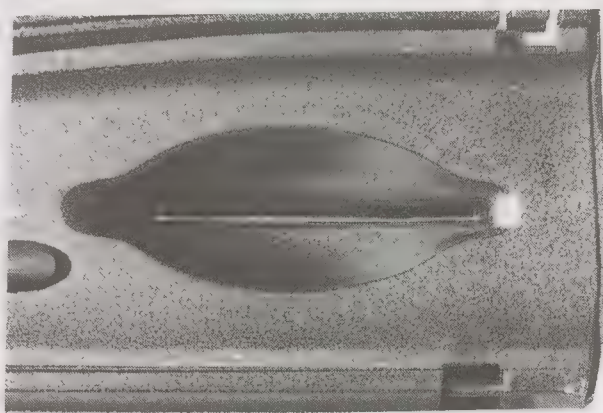
"There are various versions of the Irdeto Conditional Access Module that were purchased by Galaxy and AUSTAR. The differences between CAMs are both hardware and software. Some versions are non DVB (i.e., not DVB Compliant and therefore proprietary to Irdeto). The majority in use or to be used are Irdeto Fast 1 (proprietary) and Euro 1 (DVB compliant). Irdeto as implemented in Australia has no scrambling mode which utilises only the CAM (i.e., a smart card is always required). In simple terms, an Irdeto CAM is useless without a smart card and vice versa (the smart card is useless without the matching CAM).

"Although Irdeto IRDs imported from other countries (South Africa, Thailand, Germany) may currently work on the AUSTAR CAS (conditional access system), this will not always be the case. IRDs purchased by AUSTAR supplied to customers remain the property of AUSTAR.

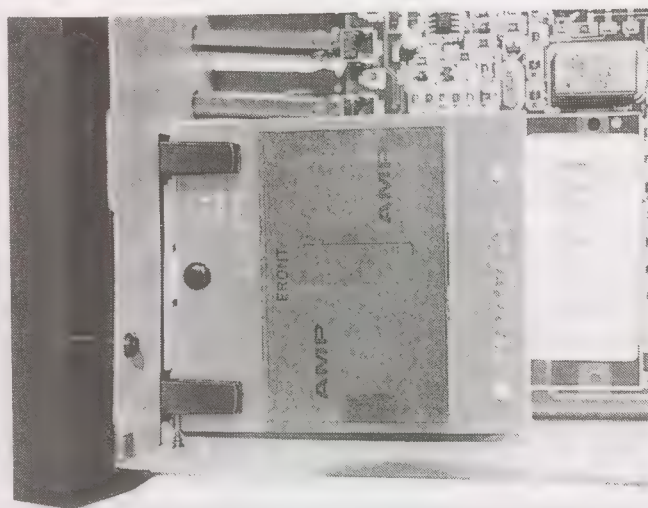
"From the technical perspective there is software imbedded in the IRD which pertains only to the AUSTAR network. If AUSTAR elects to upgrade, change or debug software in these IRDs, it will only be the AUSTAR provided IRDs that will accept the updated data stream. An example of this will be the 8 day Extended Electronic Program Guide (EPEG) and Open TV interactive services we intend to start by Christmas. A non-AUSTAR IRD quite probably will not function with the new services, indeed may cease to



CAM (above) from Panasonic TU-10DS is Irdeto version 2.3. UEC is CAMless (below).



UEC 642 card slot hides fact there is no actual plug-in CAM on board (below).



function at all with service enhancements or security upgrades. If someone attempts to block the upgrading of an IRD, they are essentially doing themselves a

1/ In fact, the new "third generation" IRD is from Sun Moon Star (SMS) according to SatFACTS sources.

disservice by choosing not to accept new and exciting services AUSTAR will be offering.

"AUSTAR has also selected a third generation IRD and no longer purchases the DGT 400 from Pace. This new product is neither a Pace, UEC or Panasonic product (1) and has a much higher spec than any other IRD currently in use in the Irdeto market world-wide."

Irdeto's Peter Iles further suggests that technology will shortly allow two (or more) totally dissimilar conditional access systems to share the same data stream. New technology called "simulcrypt" and being shown in September for the first time at a German trade show will allow two different CA systems (such as NDS and Irdeto) to share one data stream. It will be possible, Iles believes, "for a common service such as TNT that is shared between say Foxtel and Austar, to be transmitted only one time in a bouquet while subscribers to each service will log onto the programme channel by identifying their own conditional access data from the stream." This will greatly reduce the costs associated with competitive bouquets purchasing transponder space since programme sources that duplicate on two or more competitive services will no longer require separate transmission space. The amount of data "room" to include both Irdeto and NDS conditional access information within the TNT programme portion of the stream will be far less than if both services had to separately rent transponder space to duplicate TNT on each service.

This means an 18 channel service (such as Austar) can be wed to a 35 channel service (such as FoxSat) with each service delivering to its customers only the channels which pertain to that customer and the specific service selected. Simulcrypt is a "bolt on" attachment which connects to the "mux" (programme channel combiner) unit at the uplink.

As Iles notes, "Neither programmer gives up anything with this approach. Both are free to continue using their respective IRDs and each IRD only functions with the designed-for system. By sharing transponder space, there is a significant reduction in operating costs for the operators involved, but without attacking the integrity of each service provider's CA system."

UEC's Russell Futter in responding to the Adrian Potter text just cited, notes:

"Adrian Potter's statement is essentially correct bearing in mind that 'CAM' is an abbreviation for Conditional Access Module. Plug-in? The 642 does not have a plug in CAM therefore his description of a state of the art IRD using a CAM is not completely correct when used in context with the 642."

It will be interesting to see if the SMS unit purchased by Austar uses a plug-in CAM or not. If CAMs will be gone from then-current production IRDs within 18 months, Austar's decision could prove to be troublesome in the years ahead. In this field, today's technology is out of date before it appears in the marketplace!

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this issue of SatFACTS

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SatFACTS Pacific/Asian Region Orbit Watch: 15 August 1998

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Analogue Free-to-Air 57E to 80E

DDI	55E/2DT 1330/L
Sun Music	57E/703 1395/R
RTNC	1352/R
Gemini	1220/R
AsiaNet	1170/R
WorldNet	1095/R
TVi	1025/R
Muslim	975/L
Tests	66E/704 1385/R
Mongolia	1135/L
Home TV	68.8/Pas4 Vt/1310
ABN	Hz/1365
BBC W	Vt/1286
Sony TV (Hindi)	Hz/1240
Maharishi	Hz/1218
Doordar.	Vt/1116
CNNI	Hz/1065
TNT/Cart.	Hz/1040
MTV Asia	Hz/965
ZJTV	76/Ap2R 1390/Vt
TVT	78.5/Th3 1280/Vt
Army TV	1390/Vt
MRTV	1460/Vt
Mynamar	1465/Hz
Tests	1500/Hz
RAJ-TV	1510/Vt
Unk.Asian	1570/Hz
Tests	1630/Hz
RAJ-TV	1655/Hz
ATN	1674/Hz
TK Rossija	80/Exprs. 1472/L
VT4+	1275/L
ACT/TB3	1225/L

Anal. Free-to-Air 80E to 113E

Russia 3	80/Exprs 1025/R
RTR I	90/S6 1475/R
Orbita I	1275/R
RTR II	1234/R
Orbita II	1215/R
VTV4	91.5/Me1 Hz/1440
RTM1	1270/Hz
Metro	93.5/In2b 987/Hz
National	1022/Vt
DD9	1080/Hz
DD.7 (T)	1070/Vt
DD.9(K)	1180/Vt
DD.1	1268/Vt
DD.	1310/Vt
DD.4	1388/Vt
ORT I	96.5/S14 1475/R
Madagas- car ++	1325/R
Tv Azer.	1275/R
ERTU Egypt	100.4/As2 1508/Hz
Test Card	1490/Vt
Feeds/Iran	1470/Hz
Feeds #	1290/Vt
WorldNet	1265/Hz
CCTV4	1190/Hz
RTPi	1170/Vt
RTR	103/S21 1475/R
Vrk/Apt	1275/R
TVRI	108/B2R 1150/Hz
TPI	113/C2 967/Vt
TV5	990/Hz

Polarisation?
/L is left hand circular. /R
is right hand circular. /Vt is
linear vertical. /Hz is linear
horizontal

Anal. Free-to-Air 113E to 148E

Brunei, feeds	113/C2 1010/Vt
MTV Asia	1030/Hz
Herbalife (2100 HKT)	1070/Hz
TV Indosiar	1090/Vt
CNBC	1110/Hz
ANteve	1130/Vt
SCTV	1190/Hz
TV3	1250/Vt
ATV(7) Australia	1270/Hz
TVRI	1310/Hz
Gujarat +	1350/Hz
RCTI	1408/Vt
Moscow	122/As-G 1475/L
Test Card	128/Jc3 1070/Vt
Test Card	1170/Hz
CETV SD	134/Ap1A 1330/Hz
CETV2	1250/Vt
CETV1	1170/Vt
CCTV7	138/Ap1 990/Hz
Orbita-I	140/S7 1475/R
ORT1	145/S16 1475/R
RTR Russia	1275/R
GMA	146/Ag2 1363/Hz
Test Card	148/Me2 1070/Hz

Worldstar Radio Sat
Asiastar 1 to 105E
(01/99); downlink
1.451-1.492 (GHz).
Audio channel capacity:
576 @ 16Kbit/s.

- Check for
wildcard feeds

An. Free-to-Air 150E to 180E

RCTI	150/C1 990/Hz
NHK analogue	169/Pas2 1090/Vt
CNNI	1150/Vt
Feeds #	1370/Vt
Feeds #	174/1802 984/R
Feeds #	973/R
Feeds (KBS)	177/1702 984/R
Feeds #	963/R
Feeds #	180/1701 1340/R
RFO	1309/L
Feeds #	1220/R
Feeds #	1175/R
Feeds #	1090/L
Feeds #	1020/L

PALAPA C1

Tests	990Hz
Tests	1140Hz
Tests	1220Hz
Tests	1330Hz
Tests	1360Hz

C1 not recently
reported

Encrypted Analogue

Discov. India	68.8/Pas4 1365/Vt
ESPN	1290/Hz
HBO	113/C2
Asia (d) *	1150/Hz

* scheduled move to
Ap2R. digital switch
August 15th.

NON MPEG-2 DIGITAL SERVICES

People's Net (GI 1.5)	113/C2 1220 Hz
RPN-9 (SA 1.5)	142/G2 1225/L
Fox/ Prime (SA 1.5)	169/ Pas2/ 1164/Vt
Filipino Channel (GI 1.5)	1314/Hz

Frequencies Given
in these charts are in
C and Ku band IF. To
calculate C-band RF,
take IF given and
subtract from 5150;
for Ku-band using
11.300 LNB add IF
given to 11,300. i.e.,
5150-1508 = 3642
while 1358 +
11,300 = 12,658.
(Tks-Mad Greek)

August Alert

With ChinaStar 1 now officially
functional at 87.5E, reports solicited -
especially from Asian observers. 110.5E
is another spot to keep an eye on
following announced launch of Sinosat
July 18, bird on station August 5. Expect
expanded B3 horizontal activity,
especially on ex-Galaxy transponders
12.376 and 12.438 Hz before next issue
of SF. PAS-2 C-band watchers - watch
3778/1372Vt for signs of expanded use
of now testing digital bouquet.

53.2 55 57 66 68.8 76 78.5 80 87.5 93.5 96.5 100.4 103 107 108 113 122 128
 S27 2DT 703 704 Ps4 Ap2 Th3 Ex2 Cs1 Me1 In2B As2 S21 Ct1 B2R C2 As-G Jc3
 C C C C C C C C C C,Cu C C C S C C C C,Cu

134 138 (139) 140 145 146 148 151 152 156 160 161 (166) 169 174 177 180 148W
 Ap1A Ap1 (Or3) S7 S16 Ag2 Me2 C1 A3 B3 B1 Mb1 (Ps8) Ps2 801 702 701 Es4
 C C C,Cu C C C C C Ku Ku Ku C C,Cu C,Cu C C,Cu C Ku

OPTUS B3
156E
 (Ku only)

Austar Mpeg 2	1389/Hz
ABC WA	1358/Vt B-MAC
Imparja	1355/Vt B-MAC
Optus Mpeg test	1326/Hz
GWN (to Sept.)	1300/Vt B-MAC
Net 9, Sky	1233/Vt B-Mac
Austar Mpeg 2	1264/Hz
BMAC	1230/Hz
School tv	1170/Vt
Aur. Test	1107/Vt
Imparja	1040/Hz B-MAC

Optus A3/152E(a)

ATN7png	1297/Vt
ATN7png	1430/Vt

a/occasional use

Palapa C2 Ku
 (seen South equator)/113E

Test bars	11.148/Vt
-----------	-----------

MeaSat 2
148E

Tests	1070/Hz*
-------	----------

* Colour bars . audio 6.8:
 C-band covers Aust. NZ

OPTUS B1
160E
 (Ku only)

RHEF /NZ feeds	1430/Hz
Data	1402/Hz
QSTV	1377/Hz B-MAC
SE ABC HABCSS	1370/Vt B-MAC
SE SBS HABCSS	1344/Vt B-MAC
NE SBS HABCSS	1339/Hz B-MAC
NE ABC HABCSS	1313/Hz B-MAC
Sky Channel	1296/Vt B-MAC
ABC Radio	1276/Hz (digital)
OmniCast	1270/Vt (FM/FM)
ABC fds	1247/Hz
Sky Nz (sport)	1245/Vt VidCrypt
Net 9 feeds	1220/Hz B-MAC
Sky Nz (Sky 1)	1218/Vt VidCrypt
Net 10	1182/Vt E-Pal
Net 9	1180/Hz E-Pal
Net 10 feeds	1155/Vt Pal
QTQ9	1145/Vt
TSS Nz & Sky Nz digital	1118/Vt
Sky Nz digital	1091/Vt
7 Net	1086/Vt E-PAL
Aurora MPEG-2	1076/Hz (tests)
CAA air to ground	1009/Vt Nbfm

PAS-2
169E
 (C + Ku)

CCTV	1433.5/Vt (Sa9223)
Feeds-#	1407/Hz
Discovery PowerVu	1374/Hz (Sa9223)
AB Asia, feeds-#	1335/Vt
ABS/CBN	1314/Hz (GI 1.5)
CNNI (1/2 Tr)	1250/Vt
MPEG-2 PowerVu	1249/Hz (Sa9223)
FoxSports	1160/Vt (SA 1.5)
Feeds-#	1150/Hz
Feeds-#	1120/Vt
NHK (digital)	1115/Hz
NHK anal.	1090/Vt
NBC Mux MPEG	1057Vt (Philips)
MPEG-2 PowerVu HonKong	1002/Vt
TCS Sing.	967/Hz

PAS-2 Ku

GWN	12.263V
MediNet	12.286V
Telstra Bendigo	12.300V
Napa TC	12.415V
MTV Asia	12.604V (MPEG)
ABC Interchge	12.629, 638, 646 /Vt
Foxtel	12.714H

Intelsat 801
174E

Feeds-#	963/R
Feeds-#	984/R

Intelsat 702
177E

Feeds-#	963/R
AFRTS	973/L (PowVu)
Feeds-# / KBS	984/R
Space TV Sys	12.612H (MPEG)

Intelsat 513
177W

Feeds-#	963/R
Feeds-#	984/R

(513 Ku)

Service	RF Freq.
US Nets	10.980V
NBC	11.015V
Feeds	10.510V

Ku Services
 Intelsat Ku band services shown here are boresighted to Japan and nearby Asia, have not been reported south of equator.

- check for wildcard feeds

UPCOMING SATELLITE LAUNCHES

JcSAT6 delayed to Aug 17 / Ku
 Orion 3 to 139E; now October 1 / C + Ku
 PAS-8 to 166E - October 29 / C + Ku
 Inssat 2E - November 13
 Gorizont 33 to ??? - January
 AsiaSat 3s - March 1 / C + Ku
 Intelsat K-TV to 95E - March - high power Ku
 GE1A to 97E - May /28 Ku Trs

Intelsat 701
180E(W)

TVNZ	955/Dmv 3000
TVNZ	964 Dmv
TVNZ	972 Dmv
TVNZ	980 Dmv
TVNZ	988 Dmv
Occ Vid.	1.020**
TVNZ	1.030
RFO +	1.055**
SPN	1.069
Feeds-#	1.090**
SCPC	1.126
SCPC	1.136
Vidip(e)	1.220-#
Feeds-#	1.254
NHK(e), NBC	1.270
TVNZ	1.293 e
RFOanal	1.309**
Feeds-#	1.340
10 Oz MCPC	1.385 (PwRvu)
CNN USA(e)	1430

* RHC & LHC
 ** LHC only
 e/ encryption

(701 Ku)

NHK	11.135H
CBS	11.475H
CNN	11.508H

SatFACTS Pacific/Asian MPEG-2 Digital Watch: 15 August 1998

Bird	Service	RF/IF & polarity	# Prog channels	FEC	Msym
I703/57E	Sky News	4187/963RHC	1	3/4	5(.632)
		4140/1010RHC	1	3/4	5(.632)
	CNBC	4018/1132LHC	1	3/4	6(.000)
I704/66E	TV5	4055/1095RHC	4	3/4	27(.500)
	Indian bouquet	4068/1082LHC	2(?)	1/2	7(.100)
	Sky News +	3805/1345RHC	2+	3/4	22(.520)
PAS4/68.5E	ART/ BBC	3980/1170Hz	2	3/4	5(.632)
	TVSN + TFC+	3743/1407Hz	6	3/4	21(.800)
	CCTV	3716/1434 Hz	6	3/4	19(.850)
Ap2/76E	AXN	3600/1550Hz	8	7/8	28(.340)
	Reuters	3636/1514Hz	1	3/4	5(.632)
	TVB 8	3680/14701Hz	2+	3/4	13(.240)
	Hallmark	3720/1430Hz	7TV	3/4	19(.510)
	Plus 21 (Adult)	3787/1363Hz	1	3/4	6(.110)
	Disney	3880/1270Hz	3	5/6	28(.125)
Thaicm 3/78.5E	UTV	3920/1230Hz	6TV(#1)	3/4	26(.662)
	UTV/MCOT	3880/1270Hz	8TV(#2)	3/4	27(.500)
	Reuters Feeds	3636/1514Hz	1TV	3/4	5(.632)
	Thai 5 Bouquet	3600/1550Hz	8TV	3/4	26(.662)
Measat 1/91.5	India Bouquet	12284/12346Vt	10+TV?	7/8	30(.000)
As2/100.5E	Chinese tests	12.295Hz 12.329Hz	1TV 1TV (BTV 1)	2/3 1/2	6(.103) 6(.930)
As2/100.5E	Laos TV	4143/1007Hz	1TV	2/3	2(.889)
	Euro Bouquet	4000/1150Hz	6TV, 1r. (#3)	3/4	28(.125)
	Hubei /HBTv	3854/1296Hz	2	3/4	4(.418)
	Hunan TV/SRTC	3847/1303Hz	1	3/4	4(.418)
	GuandongGDTV	3840/1310Hz	1	3/4	4(.418)
	Inner Mongolia TV Zizhiqu	3828/1322 Hz	2	3/4	8(.397) (1-China) (2-Mongolia)
	APTV London	3800/1350Hz	1	3/4	5(.631)
	BBC Radio	3793/1357 Hz	?	?	?
	WTN Jerusalem/ London	3790/1360 Hz	1	3/4	5(.631)
	WTN London	3786/1364Hz	1	3/4	5(.631)
	WTN HK	3775/1375 Hz	1	3/4	5(.631)
	WTN Moscow	3770/1380Hz	1	3/4	5(.632)
	LiaoningTV/Svc2	3734/1416Hz	1	3/4	4(.418)
	Jiangxi /JXTV	3727/1423Hz	1	3/4	4(.418)
	Fujian /SETV	3720/1430Hz	1	3/4	4(.418)
	Qinghai TV	3713/1437Hz	1	3/4	4(.418)
	Henan TV Main	3706/1444Hz	1	3/4	4(.418)
As2/100.5E	Sky Racing	4020/1135Vt	3TV	1/2	18(.000)
	EMTV	4006/1144Vt	1TV, 2 radio	3/4	5(.632)
	KIBC	3940/1210Vt	1TV, 4 aux.	2/3	26(.655)
	STAR/ISkyB	3900/1250Vt	19TV w/3744	7/8	26(.845)
	Hei Long Jiang	3834/1316Vt	1TV	3/4	4(.418)
	JSTV	3827/1323Vt	1TV	3/4	4(.418)
	AHTV	3820/1330Vt	1TV	3/4	4(.418)
	Shaanxi/"QQQ"	3813/1337Vt	1, 1 Radio	3/4	4(.418)
	Guangxi GXTV	3806/1345Vt	1, 1 Radio	3/4	4(.418)
	Eastern TV Taiwan	3785/1365 Vt	5TV (#5)	3/4	18(.000)

Interoperable Receivers
unknown
unknown FTA (NE zone beam)
Virtually any FTA receiver
HS-100C, e3
unknown but FTA at this time
e3
(MPEG-2, Iredeto) (some CA)
Virtually any FTA receiver
(inactive?)
(inactive?)
PowerVu (CA likely)
PowerVu, may now be CA
PowerVu Sept. start/CA
PowerVu CA
Mostly CA
Mixed CA and FTA
Nokia e3, probably others
Nokia e3, probably others
Philips
HS100C, e3
Virtually any SCPC receiver
Any DVB receiver
Virtually any SCPC receiver
Virtually any SCPC receiver
Virtually any SCPC receiver
Virtually any SCPC receiver
Virtually any SCPC + MCPC receiver
DMV, HS-100C, N163 /17X/2X
(Custom to BBC by RNET)
DMV, HS-100C, N163/17X/ 2X
Mostly CA now
Virtually any SCPC receiver
Virtually any SCPC receiver
Virtually any SCPC receiver
Virtually any SCPC receiver
Virtually any SCPC receiver
Virtually any SCPC receiver
Virtually any SCPC receiver
Virtually any SCPC receiver
Pace DVS-211 (CA)
(now) CA, PV9234
HS-100C (2.05), e3 (V5.0)
Now all CA (Pace DVS211)
Virtually any SCPC receiver
Virtually any SCPC receiver
Virtually any SCPC receiver
Virtually any SCPC receiver
Virtually any SCPC receiver
Virtually any SCPC receiver
Pv9223 (CA)

Bird	Service	RF/IF & Polarity	# Prog. channels	FEC	Msym
(As2/100.5E)	Myawady TV	3766/1384Vt	1TV	7/8	5(.080)
#	Japan Tel (feeds)	3765/1385Hz	1TV	3/4	5(.632)
	ISkyB	3744/1406Vt	19TV w/3900	7/8	26(.845)
	Star TV Sports	3700/1450Vt	5TV	3/4	27(.500)
C2/113E	Tests	11.500Hz	multiple TV	7/8	26(.850)
	Indonesia	3820/1330Vt	6TV+ (#5A)	3/4	26(.661)
	Star Indovision	3500/1650Hz 3580/1570Hz	20 TV (#7)	7/8	26(.850)
(off air?)	Indovision	3460/1690Hz	6TV (#7A)	7/8	21(.000)
	MegaTV	3780/1370Vt	5TV (#8)	3/4	27(.500)
Thaicom 1/120E	Thailand terres.	4120/1030Vt	6TV	2/3	27(.500)
	ITV Thailand	3760/1390Vt	8TV		
API/138E	Reuters	3732/1418Vt	1TV, data	3/4	5(.632)
	CNNI + Cartoon	3980/1170Vt	2+ TV	3/4	26(.000)
Optus B3 156E	Aurora Test	12.407Vt	10TV, 7radio (loading varies)	2/3	30(.000)
	OptusVision test	12.626Hz	8TV (#9A)	3/4	29(.473)
	Austar	12.564Hz 12.689Hz	18 TV, 8 radio (#9B)	3/4	29(.473)
Optus B1 160E	Aurora (MPEG test)	12.377Hz	5+ TV	2/3	30(.000) [27(.500)]
	Sky NZ Tests	12.391Vt 12.418Vt	7 + 7 TV, 4+ audio	3/4	22(.500)
PAS-2 169E	ABC Interchange	12.646 (.638, .629)Vt	1 TV (each)	3/4	6(.980)
	Telstra Bendigo	12.300Vt	3TV, 2 radio	1/2	10(.138)
	GWN Perth	12.265Vt	2TV, radio	1/2	16(.200)
(Inactive)	Foxtel tests	12.714Hz	up to 6TV (#9C)	1/2	29(.473)
#	Hong Kong PowerVu	4148/1002 Vt	8TV (#12)	2/3	24(.430)
#	NBC Hong Kong	4093/1057Vt	5 TV(#13)	3/4	29(.473)
	JET Singapore	3962/1188 Vt	2TV (1-Ntsc, 2-Pal)	1/2	13(.740)
(avoid ch 8, 9!)	ESPN (USA)	3860/1290Vt	7TV, 2 control	7/8	26(.470)
	ART America	3778/1372Vt	up to 8TV (#13A)	2/3 7/8	6(.618) 23(.695)
	Service 1	3761/1389Vt	1 TV	3/4	6(.620)
	CCTV China PwrVu	3716.5/ 1433.5 Vt	5TV (#14)	3/4	19(.850)
	TCS Singapore	4183/967Hz	2TV(#15)	1/2	6(.620)
#	ITJ- J Telecom	4.174/976 Hz	1 TV	3/4	5(.632)
	AAR-ART//RAI	4151/999 Hz	3TV(#16)	3/4	5(.632)
#	Feeds	4138/1012Hz	1TV	3/4	6(.620)
	NHK Joho	4035/1115Hz	5TV (#16A)	3/4	26(.470)
#	PAS-2 feeds	3940/1210 Hz	2TV(NTSC)	2/3	6(.620)
#	NAPSA(t)4	3940/1210Vt	2+TV, 1 data	2/3	7(.498)
#	California PowerVu	3901/1249Hz	8TV (#17)	3/4	30(.800)
	Disney/Aust.	3804/1346Hz	3TV	5/6	21(.093)
	Discovery Singapore	3776/1374 Hz	7TV (#18)	3/4	21(.093)
	Satcom 1-6	3743/1407Hz	6TV	7/8	19(.465)
I702/177E	AFRTS	4177/973 LHC	8TV, 12 radio & data (#19)	3/4	28(.000)
	SPACE TV Systems	12.612/1312 Hz	10TV, 9 radio (#20)	3/4	26(.694)

Interoperable Receivers
HS-100C (PIDs now 1062/1063)
Virtually any FTA receiver
Pace DVS-211 (CA)
Pace DVS-211 (CA)
Pace DVS-211 (CA)
Initially - virtually any FTA
Pace DVS-211 (CA)
Pace DVS-211 (FTA)
N2X/DVS-211(CA)
unknown
unknown
N163/17X/2X
(CNN clear) / unknown
Irdeto CA - tests (UEC 642 with card)
FTA for testing only
DGT400 CA (some now CA)
N163/17X/2X, Pv9223, HS-100C
NDS CA (new Pace IRD: model # unknown)
Pv9223, Hs100C, e3
Pv9223/9234, (CA)
Pv9223, 9234 (CA)
FTA during temp. testing
Pv9223, HS-100C(*), N2X* (some FTA)
Most FTA receivers: CA soon?
Pv9223 (CA)
Pv9223 (CA)
1 ch test 6(.618) with expanded 8 ch service to launch
virtually any FTA receiver
Pv9223, HS-100C, N163/17X/2X (FTA)
Virtually any FTA receiver
HS-100C
Virtually any FTA receiver
HS-100C, e3
1CA/D9234: 2-FTA HS-100C
Virtually any FTA receiver
Virtually any FTA receiver
CA PV9223: FTA virtually any receiver (some with NTSC glitch)
Pv9223 (CA)
Pv9223, HS100C, N2X (occasionally Ch. 2 FTA)
Pv9223(CA)
Pv9223 (CA)
XTCCDTV200

Bird	Service	RF/IF & polar	# Prog Chs	FEC	Msym	Interoperable Receivers
1701/180E	TVNZ Gennet (feeds)	4195/955RHC 4186/964 4178/972 4170/980	1TV(CA) (BBC Gennet) 1TV(CA) (APT/TVTokyo+)	3/4	5(.632)	DMV.. HS100C, N17X, 2X. e3 (for non CA channels when active: not all channels active all of the time).
	Americas(radio)	4175/975LHC	3+ radio (?)	2/3	3(.680)	Receiver unknown (CA)
	TVNZ CRY	4120/1030RHC	1TV	3/4	5(.632)	(see TVNZ above)
	RFO-Canal +	4095/1055LHC	7TV, 5 rad.(#21)	3/4	27(.500)	MPEG-2, 2-CA, 3 FTA
	SPN Nauru	4081/1069RHC	1TV	3/4	4(.730)	HS-100C. e3
(limited hours)	Baccarat Game	4028/1122RHC	1TV	5/6	2(.702)	Hyundai 2.25. others likely
	Unknown	3922/1228LHC	2TV (FTA)	7/8	21(.200)	reception not verified
	TVNZTL	3854/1293RHC 3844/1306		3/4	5(.632)	HS100C. e3 (now CA)
	10 Australia	3765/1385RHC	6TV	7/8	29(.900))	Hs100C, e3. Pv9223 (4ch CA)

Bouquets: 1) Thailand UTV: (Now all CA); 2) Thailand UTV/MCOT: (Disney, TNT/Cartoons FTA; rest CA) 3) European Bouquet. (1) Deutsche Welle, (2) MCM, (3) RAI International, (4) RTVE, (5) TV5 Paris; Radio (1) DW#1 (stereo), (2) DW#2 & 3, (3) DW#4 & 5, (4) YLE (left) & RCI (right), (5) WRN & test, (6) REE, (7) RF#1, (8) RF#2, (9) RFI Music, (10) RNW, (11) RAI, (12) NN, (13) SRI; 4) STAR TV Hong Kong. (Now all CA); 5) Eastern TV Taiwan. Now all CA except occasional (5) RockTV/TTV; 5A) Indonesia Bouquet. (1) RCTI, (2) TPI, (3) CNNI, (4) CNBC, (5) MTV Asia, (6) TV5 Asia; 7) Indovision. 20 channels operating at last report, all CA; 7A) Indonesian Bouquet: (6 terrestrial TV services FTA on DVS-211 receivers [transponder reaches South Pacific as well]; 8) MegaTV operating status unknown; 9A) Optus Vision tests, FTA as of 10-07-98 (temporarily): (1) Odyssey, (2) Movie 1, (3) Move Extra, (4) Movie Greats, (5) MTV, (6) Sky News, (7) AFL, (8) ESPN; 9B) Austar (encrypted as of August 5) (1) Fox Sports, (2) Showtime, (3) Encore, (4) TV1, (5) Arena, (6) Channel <v>, (7) Nickelodeon, (8) Discovery, (9) Fox Sports II, (10) Lifestyle, (11) Comedy Channel, (12) World Movies, (13) Announcements, (14) CMT, (15) TNT/Cartoon, (16) BBC World, (17) TVSN, (18) CNBC; 9 radio (8 CD stacker fed); 9C) Foxtel tests: currently inactive. 12) Hong Kong PowerVu. (1) CTN 1, (2) CTN II, (3) TVBI, (4) TNT/Cartoons (PAL), (5) Ad-hoc II (NTSC), (6) Ad-Hoc PAL (blue screen), (7) CTN III, (8) CTN IV; 13) NBC Hong Kong. (1) CNBC Asia, (2) CNBC Australia, (3) National Geographic, (4) NBC feeds, (5) NGS-Taiwan; 13A) (1) ART America, (2) ART Movies, (3) LBC America, (4) RAI Int America, (5) LBC Australia, (6) ART Australia, (7) RAI Int Australia, (8) MCM Music Ch; 14) CCTV China. (1) CCTV4, (2) CCTV3, (3) CCTV9, (4) CCTV4, (5) CCTV5, (6) CCTV8, (7) CCTV tests + radio on extra audio channels; 15) TCS Singapore. (1) TCS Test, (2) TCS Default (repeats channel 1); 16) SCPC3. (1) ad-hoc use, (2) AAR/ART, (3) RAI International; 16A) NHK World (1) NTSC Jap, (2) NTSC Eng, (3) PAL Jap, (4) PAL Eng, (5) NHK radio, (6) NHK Premium 17) California PowerVu. (1) CMT(NTSC), (2) Ad-Hoc 1 (3) ART (4) EWTN (NTSC) global Catholic radio, ch. 2, (5) BBC World (NTSC), (6) Bloomberg Financial (NTSC), (7) Golf Channel (NTSC), (8) Animal Planet; 18) Discovery. Now all CA except occasional (2) Disc. default; 19) AFRTS. Up to 19 video, audio, data channels; non accessible (PowerVu CA); this is a very dangerous (Bootloader) place for D9223 receivers to be! 20) SPACE Systems (177E, Ku) as of 03-08-98, 10 TV programme channels load including 301 (Thai TV5.), all perhaps temporarily FTA. 21) RFO (feeds from France). (1) Canal + (Caledonia), (2) Canal + (Polynesia), (3) Saudi TV, (4) Abu Dhabi TV, (5) TOM1/RFO1, (6) TOM2/RFO2, (7) TOM3, (8) Radio Abu Dhabi, (9) Elibera FM, (10) Radio F1-stereo, (11) France Radio Contributions, (12) RFI France.

MPEG-2 DVB RECEIVERS: [Data here is believed accurate; we assume no responsibility for errors in this volatile area!]

AV-COMM R3100. FTA, excellent sensitivity (reviewed SF May 15, 1998). Av-Comm Pty Ltd, tel + +61-2-9949-7417.
Grundig (Gng) DTR1100 (badged Panasat 630, believed no longer in production). Av-Comm Pty Ltd (tel 61-2-9949-7417)
Hyundai-TV/Com. Ceased production of HSS-100 family of IRDs in March. Still in pipeline, model HSS-100B/G (for Pacific) and HSS-100C (for China). Versions in 2.25/2.26 region were good performers, version 5.0 had tuner sensitivity and other problems. Skandia (tel 61-3-9819-2466) has version 3.11 about which nothing is known; SATECH (tel 61-3-9553-3399) has version 2.26.
MediaStar D7. Supplier preloaded software known channels, V. 2.09, 2.10 from Opac Pty Ltd. (61-2-9584-1233)
Nokia "d-box" (V1.7X) suitable for C-band use. Instructions, on-screen prompts may be in German. Be careful when buying this one!
Nokia 9200/9500/9600. There are too many Nokia versions to count. The original 9500S software version 1.63 was uniquely capable of going through a satellite and locating digital transponders and placing on the menu screen the Msym. FEC and operating frequency of every digital signal found whether FTA, CA, MCPC or SCPC. Sadly, that ability is gone with newer models. Current version software within 9200/9500/9600 model numbers is 5.0 or higher. Nokia refuses to support distributors in Asia or the Pacific and users are forced to locate and purchase product through European sources. The most helpful and knowledgeable Pacific region supplier for this product is AV-COMM Pty Ltd at tel 61-2-9949-7417. (See this listing, SatFACTS April 1998 and earlier for greater detail.)
PACE DVS-211. Officially available only through Sky (racing) Australia (Bob Pankhurst tel 61-2-9451-0888).
PACE DGT400. Original Galaxy IRD, now owned by Foxtel. For status (within Australia) call HOTLINE 1300-360818.
PACE DVR-500. Apparently no longer current except through NBC to cable, broadcast affiliates; basically DGT400, has CAM ability.
Panasat 520 (Pn520), 630 (Pn630), 635 no longer available; spares through UEC in South Africa (fax + +27-31-593-370)
Panasonic TU-DC10/TU-DS10. Scheduled for use in Optus RABS digital conversion; Antares Electronics tel + +61-7-3205-7574
Phoenix 222. FTA including PowerVu. Exceptional graphics, ease of use. Satech (61-3-9553-3399).
Power-Com. FTA including PowerVu, NTSC and PAL. NetSat (61-2-9687-9903)
PowerVu D9223, 9225, 9234. Scientific-Atlanta (Sydney) Tel 61-2-9452-3388; BaySat (tel 64-6-843-5296), Telsat (64-6-356-2749)
 Note: SA D9223 receivers are RISKY to use for enthusiast purposes because of susceptibility to software overwrite during "boot-loading" sequence. Model 9234 is currently distributed in Western Australia for GWN reception under "RTIF" subsidy programme, and for NHK Premium through SA as well as in PNG for EMTV "authorised" sites.
Praxis DigiMaster 9600 digital/analogue receiver. Kristal Electronics (tel 61-7-4788-8902)
Prosat 2102S. DVB, NTSC and PAL, menu-driven, SCART and RCA outputs. Sciteq Pty Ltd (tel 61-8-9306-3737)
SK888. From Sun Moon Star (DigiSkan) through Skandia Electronics Pty Ltd. (tel 61-3-9819-2466)
UEK 642. Irdeto equipped for Australian RABS services, will also do pay-TV Irdeto services. Nationwide Antennas (61-7-3252-2947).
YURI HSS-100C. Rebadged Hyundai, software 2.27 which is Australian created mod from V2.26. Nationwide (61-7-3252-2947)

WITH THE OBSERVERS

AT PRESS DEADLINE

"Kermit Channel" has scheduled launch date of September 14th (Ap2R within Hallmark bouquet). Intended only for cable, possibly SMATV; contact Peter Chan Liong at + +63-2-717-0622. Foxtel (Sat) telling people "We will allow you to use your own receiving equipment, before end of this year."

Hallmark on As2 uplinked from Subic Bay is gone. Forever. Moved to Ap2R, PowerVu (as reported last month) with uplink now at ex-MGM Gold facility in Hong Kong. *Rest in peace, Hallmark.*

Chinasat 1 (a.k.a. Zhongwei 1 at 87.5E; SF#47, p. 29) is officially functional but no detailed reports are available, suggesting footprint map we published in July is accurate (i.e., signal coverage south of the equator is at best minimal). Reports from observers in Asia encouraged!

Thaicom 1A at 120E has some digital activity; try (FTA) 3760Vt which includes Thai TV5 network and 3946Vt. Again, reports are requested.

Observer **Brendon Bell** (Hastings, NZ) reports FTA analogue feeds from Optus B1 on 12.392/1092Vt, 12.422/1122Vt and 12.733/1433Vt with Australian Rugby. The 1092/1122 use is now history with Sky NZ launching split analogue and digital service testing here late in July (see p. 30). Future feeds to NZ are likely to be on the 12.733/1433 channel.

Observer **David Leach** (NSW) reports installation of Palcom 7700 receiver. "There has been a dramatic improvement in sharpness of video, the best threshold extension I have experienced, and improved audio on weaker stations." He reports ApStar 2R often has only digital signals present making satellite location difficult for analogue-only observers. He adds, the most dependable Thaicom 3 analogue services are MRTV (3690/1460 Vt), tests (3650/1500 Hz) and Army TV (3760/1390 Vt). With the 7700 in-built automatic tracking, he finds Gorizont S7 at 140E requires tracking typically in 60 minute increments (3675/1475RHC) while Gorizont S16 (145E) is moving faster and requires elevation tracking adjustments every 10-12 minutes (3675/1475 RHC).

Observer **Stu McLeod** (NZ) reports the demise of TVSN on PAS-2 (3745/1405 Vt) has allowed CCTV's digital bouquet that previously shared the same transponder to "bounce upwards" in level. CCTV and TVSN had fought a battle for "control" of the transponder from day 1, neither side willing to admit they were nudging their uplink signal to the satellite in an effort to be better received. Hopefully, PanAmSat will not allow two different services to share a transponder in this particular fashion in the future - it simply does not work very well. **Laurie Mathews** (Auckland, NZ) reports the ex-TVSN transponder on As2 (3660/1490 Vt) has been carrying an Optus test card at greatly reduced signal level since demise of

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SIGN UP - pay up or lose your service. Austar and FoxSat announcements appearing on programme channel 13 late in July. They wanted decoder serial number because Galaxy records are incomplete.

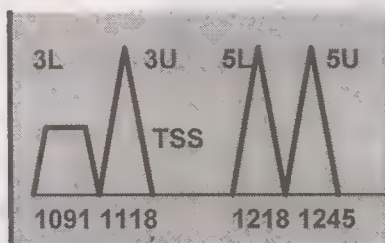
**Former Galaxy customers must
contact FOXTEL on
1 300 360 646 to establish an
account to ensure your service
will not be interrupted.
To assist with processing,
please have your Smartcard
and Decoder serial numbers
available.**

TVSN there. Optus previously uplinked the shopping service to AsiaSat.

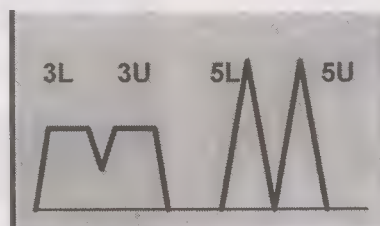
WITH THE OBSERVERS: Reports of new programmers, changes in established programming sources are encouraged from readers throughout the Pacific and Asian regions. Information shared here is an important tool in our ever expanding satellite TV universe. Photos of yourself, your equipment or off-air photos taken from your TV screen are welcomed. TV screen photos: If PAL or SECAM, set camera to f3.5-f5 at 1/15th second with ASA 100 film; for NTSC, change shutter speed to 1/30th. Use no flash, set camera on tripod or hold steady. Alternately submit any VHS speed, format reception directly to SatFACTS and we will photograph for you. Deadline for September 15th issue: September 3 by mail (use form appearing page 34), or 5PM NZT September 4th if by fax to 64-9-406-1083.

SKY (NZ) Turns on Digital Data Stream

Sky NZ began testing of their new NDS format (Pace receivers) MPEG-2 July 28 on Optus B1, Vt, New Zealand beam. Initial tests were at low power, dividing transponder 3 into lower and upper halves with a maximum of 7 TV programme channels per half. Testing by July 31 included an analogue signal in 3U (12.418 / 1118IF) in preparation for feeding of FTA Trackside Satellite Service (TSS). It is likely Sky, working around the 11AM/12n (NZT) - 11PM analogue feeds for TSS will restrict digital testing to half transponder (12.391 / 1091) 3L except when TSS is off.



Analogue + digital look (above),
digital only (below) - some displays will
be reversed



Typical analyser displays appear here (including pre-existing Sky Sport (12.518/1218) and Sky 1 (12.545/1245). Note digital signal(s) will be approximately 8-10 dB below peak analogue readings. Most FTA receivers will load but not display their tests with some intriguing programme channel names - such as "Mosaic 101" and "Adult Test." NDS has names such as "Encryption 2 Stream 2 (201)."

Overall levels suggest 10 dB or better CNR on 60 - 76cm dishes across NZ from Auckland south, 8dB or less at extreme north end of North Island.

Australian Rules Do NOT Prohibit Austar from Invading Cities

In a letter dated 17 July, Beverly Hart (Assistant Secretary, Licensed Broadcasting Branch, Department of Communications and the Arts) tells SF reader David Leach, "You express concern about a law which prevents more than one pay TV company operating in Newcastle. *There is no such law.* The pay TV licences held by all of the existing operators are national licences and entitle the licensees to deliver a pay TV service anywhere in Australia. While only Austar currently offers a pay TV service in Newcastle, this is the outcome of commercial factors and not the result of government broadcasting policing or licensing arrangements. The areas in which any of the existing pay TV operators or any new operators offer a service is a matter for their commercial judgement." That should settle this particular bit of misinformation making the rounds.



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CCTV on PAS-2 (3716.5/1433.5 Vt) has expanded their auxiliary audio services by adding non-Mandarin language audio to several services. Check left and right and audio 3 and 4 (on D9223) - CCTV3 and CCTV9 for signs of Portuguese (for Macau), Russian, Arabic and English as parallel audio services to normal TV programme audio.

A number of observers, including **Steve Rouse** (Wollongong, NSW and **Robert Skilton** [Te Anau, NZ]) confirm that SPACE TV programming on 1702/177E (12.612/1312 Hz) is still functional. In fact, you may even catch it FTA! This note. In the latest line-up, those two naughty North American channels (Exxtasy and True Blue) are gone (not CA, but gone). Rouse found present channels to load as 209T, 208T, 201T, 202T, 203T, 204T, 205T, 206T, 207T on his Nokia e3 (all NTSC) + 301T (Thai TV5 in PAL). Additionally, radio or data channels 501 through 509, still CA on his system (if in fact there is anything at all on these channels - can anyone verify?)

Robin Colquhoun (NZ) reports what is apparently a data service digital channel on PAS-2, 4146/1004Hz with Msym 1.674 and FEC of 3/4.

AsiaSat 2's Star TV transponder 3700/1450Vt is back again, this time with (NDS CA Msym 27.500, FEC 3/4) package consisting of (1) ESPN Taiwan, (2) ESPN Philippines, (3) ESPN Asia, (4) Star Sports Asia, and, (5) Star Sports South.

Yes - MegaTV is apparently still functional on Palapa C2 (3780/1370Vt) with 5 TV programme channels. Indovision on Palapa C2 (3500/1650 Hz, 26.850 and 7/8) measured on 4m dish in NSW shows 20 channels active in NDS CA format: (1) Cinemax, (2) Hallmark, (3) Discovery, (4) CNN, (5) TNT/Cartoons, (6) ESPN, (7) BBC World, (8) CNBC, (9) National Geographic, (10) Hallmark (repeat), (11) HBO, (12)

Fox News, (13) Citra TV, (14) Star Movies SEA [Southeast Asia]), (15) Channel [v] Asia, (16) Phoenix, (17) Star World, (18) Star Sport, (19) Film Indonesia, and (20) Star Movies.

HBO Asia cable TV service feed Palapa C2 (4000/1150Hz) scheduled to move August 15th to ApStar 2R and change to digital format. Here's hoping something useful replaces HBO on this powerhouse C2 transponder!

Nokia version 1.63. Observer **Francis Kosmalski** (Auckland, NZ at tel 64-9-849-3512) is interested in trading 'even' his IRD for a Hyundai or e3 version Nokia. You may recall the 1.63 was the only IRD capable of doing a complete search for SCPC and MCPC services without knowing any numbers at all.

'Sport 927' has joined the Austar/Fox radio line up (now 9).

Tuning tip. If a previously available FTA service (such as - CMT on California Bouquet) suddenly fails to load, try erasing the entire bouquet and asking IRD to reload it. When PID numbers (digital coding) is changed, some receivers require complete new bouquet load to work again. This is especially true with PowerVu services and applies to the NBC PAS-2 bouquet as well.

Indovision's S-band Cakrawarta satellite. You can forget about looking for it, for now. Officially, "*We will use Cakrawarta-1 at the right time and the right time is not now.*" Indovision DTH service is managed by (Murdoch's) Star TV group under a 10 year contract negotiated in 1995. However, like everything involving Indonesian broadcasting at the moment, the future of the service, the Star TV agreement, and day to day operations is very 'iffy'.

Indovision C2 3460Hz off, replaced with C2 3820Vt loading RCTI, TPI, CNN, CNBC, MTV and TV5; FTA initially at Msym 26.661 and FEC 3/4.



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AT

Sign-Off

Safety and Liability

There is a considerable amount of "page space" in this issue devoted to subjects that skirt around product safety and provider liability. These are topics often avoided in "polite publications" because people who live in glass houses are usually advised not to throw bricks or stones. In other words, before we jump on someone else for a practice that might be unsafe or even illegal, it is usually prudent to make certain we are not guilty of something as bad or worse.

A writer who asked us to withhold his name ("...our company group policy requires approval before any press statements can be made by employees") writes on page 4, "Your statement on the serviceability of the D7 is contradictory. On page 7 (July), 'Fuse holder is at bottom of the power supply compartment', while the photo suggests the entire power supply has to be removed to change a fuse?"

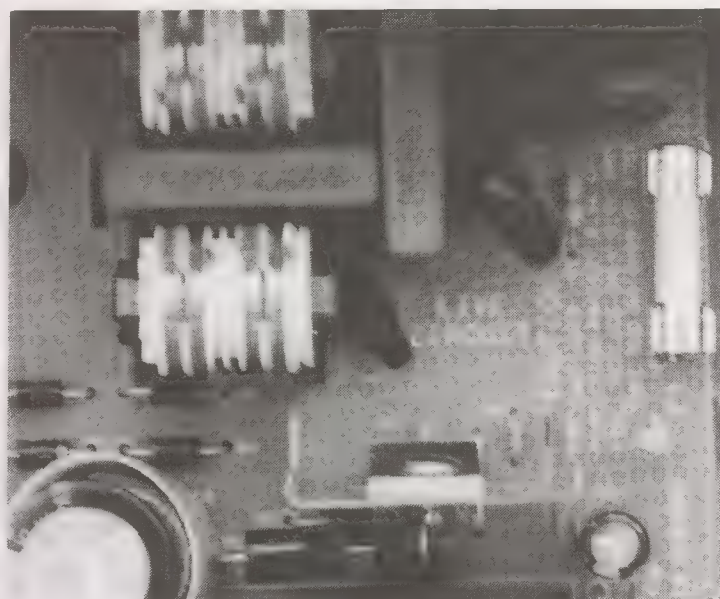
The writer has us and we admit it. Our references to serviceability related solely to the clean circuit board layout of the MPEG-2 processing portion, and the ease with which a technician could (if required) get to the board parts to diagnose a problem and create a repair.

Most - we understand 80% or better - of IRD problems relate to the power supplies. Filter capacitors blow (sometimes taking the top off), resistors get hot and incinerate, and yes - fuses do blow. And double yes - the D7 would require you to take the power supply out of the case (two screws holding two mounting pillars in place - not a major challenge) to change the fuse.

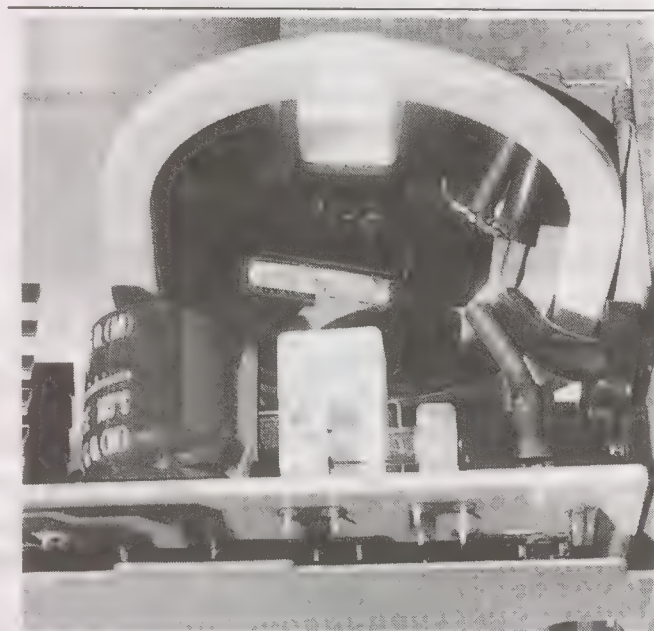
Many (more than 50%) of IRD power supplies go in "sideways" which means you can only inspect the parts or trace the circuit by removing the power supply board. We were pleased to see Comstream in creating the Panasonic TU-DS10 was mature enough in product design to allow the power supply to go in rear-side-of-circuit board down. This means the technician faced with tracing a problem, or changing a fuse, can do so with the board still in the case and all leads attached.

There are safety issues (C-Tick and consumer electrical codes) as well as service friendliness involved here. If 80% of the service problems with today's IRDs involve the power supply, doesn't it make sense to have a power supply that can be serviced without special tools and skills? Compare the top right photo (TU-DS10) with that below, right. You can locate

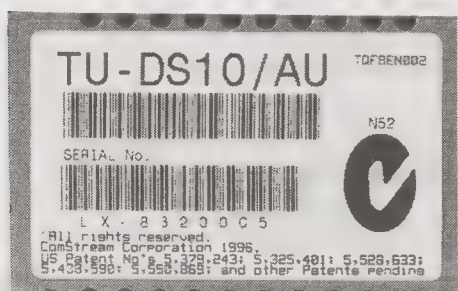
parts (which are identified on the board with numbers) and trace wiring on the TU-DS10. When a torroid power trans- former came loose from the circuit board on



"Live Circuit" warning on board of Comstream/ Panasonic TU-DS10 IRD might not stop an inexperienced person from getting shocked but it does serve a "liability" function.



FUSE may be serviceable but we had to place a small hand mirror inside P/S cabinet to inspect a torroid power transformer that broke off the mounting posts on the UEC 642 sideways mounted P/S we were shipped for testing.



our test-sample UEC 642, a mirror and some fancy finger work were required just to *identify* the problem. The next challenge was to get the P/S board removed from the cabinet and in front of us for repair (ultimately Nationwide asked for the unit back, promising a replacement). The UEC claims "latest generation software," perhaps the same might not be said about the *power supply*?

C-Tick certification is separate from normal safety matters. On the left, the C-Tick mark as it appears on the TU-DS10. By January 1, 1999, all IRDs and analogue receivers will require a C-Tick certification mark. And that's a subject for another report in a future SatFACTS.

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- NEW programming sources seen since August 1st: _____
- Changes (signal level, transponder, programming content) in pre-existing programming sources since August 1st: _____
- OTHER (including changes in your receiving system): _____

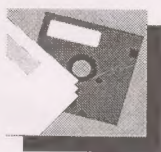
NOTE: Please use P1 - P5 code when describing signal levels and receiver IF/RF settings.

Your Name _____
Town/City _____
Make/size dish _____ LNB _____ Receiver _____
Your email address _____ if you have one!

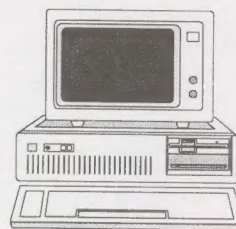
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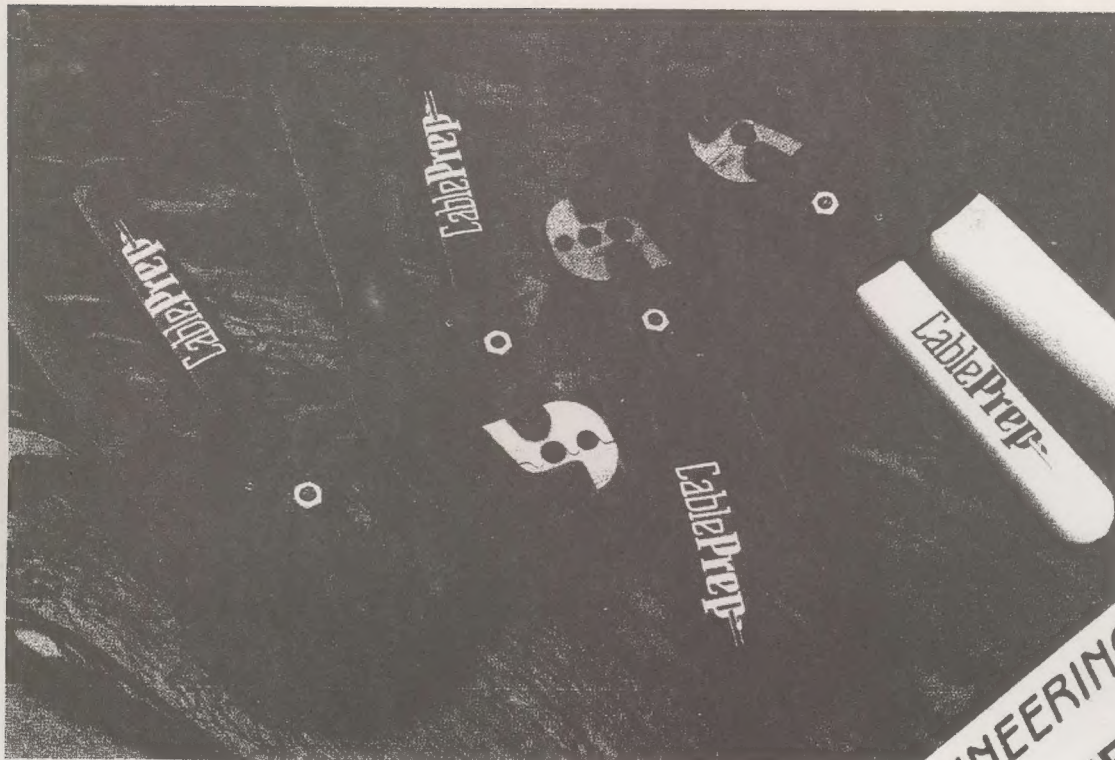
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